

# NEW SYNONYMS AND NEW SPECIES OF *STIGMODERA* (*CASTIARINA*) (COLEOPTERA: BUPRESTIDAE)

by S. BARKER\*

## Summary

BARKER, S. (1983) New synonyms and new species of *Stigmodera* (*Castiarina*) (Coleoptera: Buprestidae). *Trans. R. Soc. S. Aust.* 107(3), 139-169, 30 November, 1983.

Nine new synonyms of *Stigmodera* (*Castiarina*): *danesi* Obenberger 1933 = *castelnaudi* Saunders 1869; *sancta* Carter 1913 = *cupricollis* Saunders 1868; *acuta* Deuquet 1956 = *delicatula* Kerremans 1902; *georgiana* Barker 1979 = *domina* Carter 1931; *canaliculata* Blackburn 1892 = *erythroptera* (Boisduval) 1835; *cognata* Kerremans 1898 = *insularis* Blackburn 1897; *equina* Blackburn 1892 = *simulata* L. & G. 1837; *garrawillae* Carter 1931 = *subgrata* Blackburn 1900; *opacipennis* Obenberger 1922 = *undulata* (Donovan) 1805, are recognised. Ten species (*S. broomensis*, *S. decemguttata*, *S. hostilis*, *S. marginicollis*, *S. sieboldi*, *S. parvula*, *S. imida*, *S. vegeta*, *S. triramosa*, *S. leai*) are resurrected from synonymy. Thirty-one new species of the subgenus *Castiarina* (*alpestris*, *armistrongi*, *boldensis*, *chinnocki*, *cornishi*, *dingoensis*, *eneabba*, *cuclae*, *forresti*, *frauciana*, *furtiva*, *goldingi*, *goodingi*, *hanloni*, *hypacrita*, *jeanae*, *kalbarri*, *marginata*, *powellii*, *pseudasilida*, *pseuderythroptera*, *scintillata*, *storeyi*, *subtestacea*, *subvicina*, *supergrata*, *thürmerae*, *ligris*, *turneri*, *variegata* yellowdinensis) are described and illustrated in colour. Male genitalia of all but one are illustrated together with related species. One species given varietal status by Blackburn is elevated to full specific status, *Stigmodera* (*Castiarina*) *deserti* Blackburn 1892, and redescribed.

KEY WORDS: Coleoptera, Buprestidae, *Stigmodera* (*Castiarina*), new species, synonyms.

## Introduction

More than 300 species of *Stigmodera* (*Castiarina*) have been described representing about 1/3 of the known Buprestid fauna of Australia. They are a difficult group because many of the early descriptions are inadequate. A number of mimicry complexes occur and members resemble each other so closely that they are frequently confused, and misidentified. A revision of the sub-genus was commenced in 1969 and although much has been accomplished, completion is unlikely before 1986 when it is anticipated the work will be published in the South Australian Handbook series as brief descriptions, illustrations and keys. Interest in the group is growing and increased collecting has produced many new species. In this paper, 31 new species are described and illustrated together with redescription and/or illustrations of 10 species that are poorly known. A number of types have been re-examined and some of the synonyms of earlier workers and some of my own synonyms have been found to be incorrect (Barker, 1979, 1980). These errors are rectified below.

An almost complete collection is available in the South Australian Museum for comparison.

## New synonyms of *Stigmodera* (*Castiarina*)

- castelnaudi* Saunders 1869, *Insect. Saund.* 3, p. 9.  
*danesi* Obenberger 1933, *Čas ěsl. Spol. entom.* 30, p. 73.  
*cupricollis* Saunders 1868, *J. Linn. Soc.* 9, p. 470.  
*sancta* Carter 1913, *Proc. Linn. Soc. N.S.W.* 37, p. 501.  
*delicatula* Kerremans 1902, *Genera Insect.* 12, p. 209.  
*acuta* Deuquet 1956, *Proc. Linn. Soc. N.S.W.* 81, p. 154.  
*domina* Carter 1931, *Aust. Zool.* 6, p. 344.  
*georgiana* Barker 1979, *Trans. R. Soc. S. Aust.* 103, p. 7.  
*erythroptera* (Boisduval) 1835, *Voyage de l'Astrolabe*, p. 88.  
*canaliculata* Blackburn 1892, *Trans. R. Soc. S. Aust.* 15, p. 51.  
*insularis* Blackburn 1897, *Trans. R. Soc. S. Aust.* 21, p. 30.  
*cognata* Kerremans 1898, *Annls. Soc. ent. Belg.* 42, p. 136.  
*simulata* L. & G. 1837, *Mon. Bupr.* 2, p. 26.  
*equina* Blackburn 1892, *Trans. R. Soc. S. Aust.* 15, p. 48.  
*subgrata* Blackburn 1900, *Trans. R. Soc. S. Aust.* 26, p. 41.  
*garrawillae* Carter 1931, *Aust. Zool.* 6, p. 348.  
*undulata* (Donovan) 1805, *Epitome Natural History Insects New Holland* pl. 7, fig. 5.  
*opacipennis* Obenberger 1922, *Arch. Naturgesch.* 1922, 88, p. 116.

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### Species resurrected from synonymy

Barker (1979, p. 15) wrongly synonymised *S. broomensis* Carter 1934 with *S. biguttata* Macleay 1863. The two species occur on opposite sides of the continent. *S. broomensis* in north western Australia and *S. biguttata* in Queensland. They have a recognisable difference in their elytral patterns, *S. broomensis* is lightly marked while *S. biguttata* is more heavily marked. Male genitalia (Figs 1A, 1B) differ, the parameres in *S. broomensis* being rounded abruptly to the apex while those of *S. biguttata* are gradually rounded to the apex. I therefore consider *S. broomensis* Carter a valid species.

*S. decemguttata* Gory 1841 (Fig. 4C) was synonymised with *S. versicolor* L. & G. 1837 (Fig. 4D) by Saunders (1871). He was followed by Kerremans (1902), Carter (1916, 1931) and Barker (1979). Obenberger (1934) resurrected *S. decemguttata* and listed *S. parva* Saunders as a synonym. Carter (1940) said *S. parva* was not a synonym of *S. decemguttata* but did not discuss their status, having previously listed both as synonyms of *S. versicolor* (Carter, 1931). I have examined coloured photographs of the original plates in the Laporte & Gory monograph and have identified specimens of the species depicted. Their male genitalia (Figs 1C, 1D), external morphology, colour and pattern are quite distinct and indicate that the two species belong to different species groups. The types of *S. parva* Saunders and *S. subversicolor* are conspecific with specimens of *S. decemguttata*. I conclude that *S. decemguttata* Gory is a valid species, *S. parva* Saunders is its senior synonym and *S. subversicolor* Carter its junior synonym.

Barker (1979, p. 20) stated that *S. hostilis* Blackburn 1892 was a synonym of *S. sagittaria* L. & G. 1837. I have examined a further series of specimens attributable to both forms. Male genitalia (Figs 1G, 1H) are slightly different. The apices of the parameres and median lobe are more pointed in *S. hostilis* than in *S. sagittaria* and the apophysis of the basal piece narrower in *S. hostilis* than in *S. sagittaria*. *S. hostilis* is smaller than *S. sagittaria* with red margins to the elytra which *S. sagittaria* does not have. *S. sagittaria* is found only on the coastal plain W.A., while *S. hostilis* is found inland in lower rainfall areas in W.A. Because of these differences I conclude that *S. hostilis* is a good species.

Barker (1979, p. 16) listed *S. marginicollis* Saunders 1868 as a synonym of *S. cyanipes* Saunders 1868. *S. marginicollis* is the eastern member of a species pair and *S. cyanipes* 1868 is the western member. In *S. marginicollis* the undersurface and femora are red-brown, the tibia and tarsi are blue; in *S. cyanipes* the undersurface is dark blue with the edges of the abdominal segments variably red. The legs are blue. Male genitalia differ; the parameres of *S. marginicollis* (Fig. 1I) are broader than those of *S. cyanipes* (Fig. 1J), the apophysis of the basal piece of *S. marginicollis* is broader and the median lobe is thicker. Because the species are geographically separate, have colour and pattern differences and the male genitalia are different I consider *S. marginicollis* Saunders to be a valid species.

*S. sieboldi* L. & G. 1837 (Fig. 4F) was first synonymised by Kerremans (1902) with *S. amphicroa* (Boisduval) 1835. Carter (1916) decided that *S. amphicroa* was a synonym of *S. crenata* (Donovan) 1805 and also *S. sieboldi* (Carter 1924, 1929). Obenberger (1928) and Carter (1931) synonymised *S. sieboldi* with *S. amphicroa* and Carter (1931) listed *S. crenata* as a separate species. Obenberger (1933, 1934) then resurrected *S. sieboldi* as a valid species. Carter (1940) in an article castigating Obenberger, stated twice that *S. sieboldi* was a synonym of *S. amphicroa*. The type of *S. sieboldi* L. & G. is located in the Hope Museum, Oxford (Barker, 1979) and is very distinctive. Although the elytral markings are similar to those of *S. crenata*, *S. sieboldi* is a smaller species and has a bright blue area in the middle of the green-sided pronotum. The pronotum of *S. crenata* is entirely blue. The male genitalia of *S. sieboldi* (Fig. 1K) and external morphology are distinct from those of *S. crenata* (Fig. 1L) and indicate that the two species belong in different species groups. I conclude that *S. sieboldi* is a valid species.

Barker (1979, p. 15) listed *S. parvula* Deuquet 1956 as a synonym of *S. canaliculata* Blackburn 1892. I have examined the male holotype of *S. canaliculata* and find that it is a typical member of the *S. sexplagiata* Gory species group, with triangular genitalia and loss of tarsal pads on tarsomeres of legs 2 and 3. It is most likely a small specimen of *S. erythroptera* (Boisduval) 1835. *S. parvula* Deuquet 1956 (Fig. 1M) has elongate male genitalia distinct from the triangular genitalia of the *S.*

*aeplagiata* species group (Figs 1P-1S) and in the male type has tarsal pads present on all tarsomeres of legs 2 and 3. I conclude *S. parvula* Deuquet to be a valid species. It is a small lycid mimic and is found in central N.S.W. and in southern Queensland.

Carter (1916, 1929) synonymised *S. timida* Kerremans 1898 (Fig. 4G) with *S. flavovaria* Saunders 1871, the latter being a replacement name for *S. flavopicta* L. & G. 1837. Carter (1931) was unable to decide whether *S. timida* was a synonym of *S. assimilis* Hope 1846 or of *S. puerilis* Kerremans 1898, despite the fact that *S. timida* has priority over *S. puerilis*. Obenberger (1934) listed *S. timida* as a synonym of *S. puerilis*. Barker (1979, p. 14) listed both species as synonyms of *S. assimilis* Hope. Subsequently Barker (1980, p. 7) established *S. assimilis* as a synonym of *S. australasiae* L. & G. 1837 and then listed *S. timida* and *S. puerilis* as junior synonyms of *S. australasiae* L. & G. I have re-examined the appropriate types and find that *S. timida* and *S. puerilis* are synonymous and are a separate species from *S. australasiae*. The male genitalia of *S. timida* (Fig. 1N) are quite different from that of *S. australasiae* (Fig. 1D) and place it in the *S. cruentata* (Kirby) species group. These genitalia are slender with a broad median lobe and narrow parameres which are indented at the sides near the apex. Male genitalia of *S. cruentata* are slightly more indented at the sides forming a ledge, the median lobe is broader and blunter. *S. timida* occurs in the Blue Mts. N.S.W. and in the Stanthorpe area, Qld. *S. cruentata* occurs from Gippsland, Vic. to south-eastern Qld. It is a slightly smaller species than *S. timida*, has red elytra and very deep blue markings. *S. timida* is dark green with yellow elytra. I consider *S. timida* Kerremans to be a valid species and *S. puerilis* Kerremans to be its senior synonym.

Carter (1916, 1929, 1931) listed *S. cruentata* (Kirby) as a synonym of *S. vegeta* Hope. As this did not follow the rules of priority and agreeing that they were synonymous, Barker (1979) listed *S. vegeta* Hope as a synonym of *S. cruentata* (Kirby). I have re-examined the type of *S. vegeta* Hope and have found it distinct from specimens of *S. cruentata* (Kirby) identified by reference to a coloured transparency of the type. *S. cruentata* has red elytra and deep blue markings; the ends of the pre-medial fascia are expanded anteriorly and

posteriorly to the basal and lateral margins. *S. vegeta* has orange elytra with black markings and green or blue-green pronotum and undersurface. The ends of the pre-medial fascia are not expanded anteriorly and posteriorly, but the inferior edge of the fascia reaches the lateral margin. Male genitalia are similar except that the median lobe in *S. cruentata* is broader and blunter than in *S. vegeta*. In S. Aust. *S. vegeta* occurs on Kangaroo Isd, Yorke and Eyre Peninsulas, and in Victoria in the Ararat district.

Carter (1916, 1929, 1931) and Barker (1979) synonymised *S. tiramosa* Thomson with *S. simulata* L. & G. I have found that the colour and pattern of a distinct species from South Australia and Victoria conforms with a coloured photograph of the type of *S. tiramosa* Thomson lodged at the MNHN, Paris. The male genitalia of both species are illustrated in Figs 3Q, 3R. The parameres of *S. tiramosa* are slender and are abruptly rounded at the apex compared with those of *S. simulata* which are slightly wider and gradually rounded at the apex. On the basis of differences in the male genitalia and colour and pattern of the body I consider *S. tiramosa* Thomson to be a good species. It is re-described and illustrated (Fig. 7G).

Carter (1919) and Barker (1979) synonymised *S. leai* Carter with *S. dimidiata* Carter (Fig. 6I). I have examined types of *S. dimidiata* in NMVA and of *S. leai* in SAMA and compared male genitalia (Figs 3D, 3E). Those of *S. dimidiata* are larger than those of *S. leai*. In *S. dimidiata* the parameres are narrower at the apex and the apophysis of the basal piece broader than in *S. leai*. *S. dimidiata* (Fig. 6I) is a larger broader species than *S. leai*. The dorsal surface is a brassy green colour and there are two yellow basal spots, one on each elytron. *S. leai* is a smaller narrower species, the dorsal surface is blue-green or blue and there are no yellow basal spots. *S. leai* occurs in Tasmania and *S. dimidiata* only from mountains in Vic. and N.S.W. On the basis of these differences I consider *S. leai* Carter to be a valid species.

#### Variety elevated to specific status

*S. deserti* Blackburn 1892 was described as a variety of *S. atricollis* Saunders 1869. Male genitalia of a specimen attributable to *S. deserti* and those of *S. atricollis* (Figs 1E, 1F) are different. *S. atricollis* has narrow, elongate parameres, gradually widened from the base

and rounded off just before the apex. The median lobe has sides angling straight away from the apex. The apophysis of the basal piece widens out towards the end and is spoon-shaped. *S. deserti* has short, thick para-

meres, widened out half way from base to apex with the sides rounded off just before the apex. The apex of the median lobe is pointed, the sides round away then straighten. The apophysis of the basal piece narrows towards

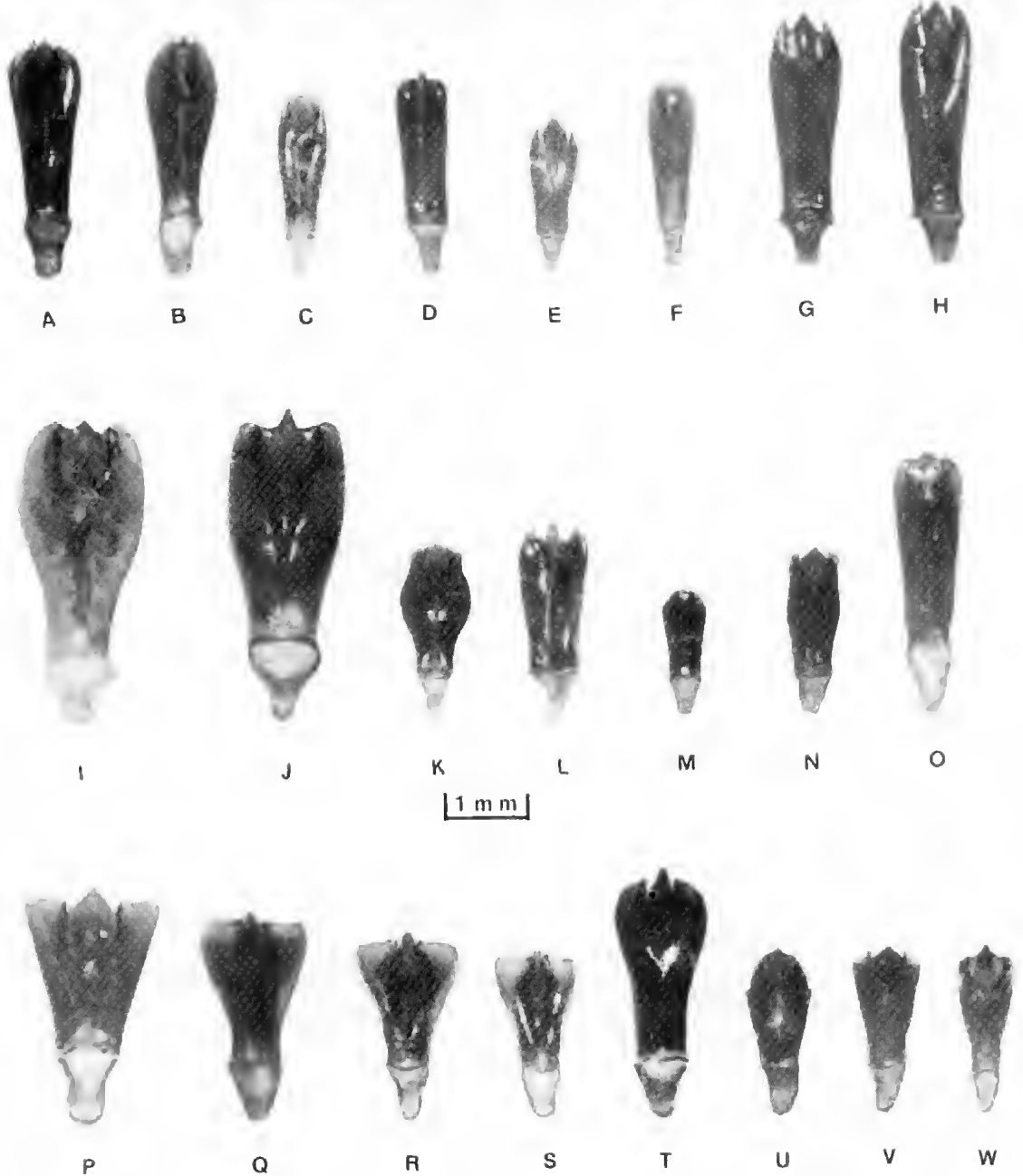


Fig. 1. Photomicrographs of male genitalia of *Stigmodera* (*Castiarina*) species: A. *S. broomensis*, B. *S. biguttata*, C. *S. decemguttata*, D. *S. versicolor*, E. *S. deserti*, F. *S. atricollis*, G. *S. hostilis*, H. *S. sagittaria*, I. *S. marginicollis*, J. *S. cyanipes*, K. *S. sieboldi*, L. *S. crenata*, M. *S. parvula*, N. *S. timida*, O. *S. australasiae*, P. *S. tigris*, Q. *S. francaiana*, R. *S. cornishi*, S. *S. vulgaris*, T. *S. thurmerae*, U. *S. powelli*, V. *S. flavopicta*, W. *S. alpestris*.

the end. *S. deserti* is an elongate species and each elytron has a wide marginal spine. *S. atricollis* is comparatively shorter. It has a sharp, elongate marginal spine on each elytron. On the basis of differences in the male genitalia and external morphology I consider *S. deserti* Blackburn a valid species. It is re-described and illustrated (Fig. 4E).

Barker (1979) listed *S. callubriensis* Carter (1931) as being described on p. 367, but in reality the description is printed on p. 386 in the journal. In reprints of the article the description was printed on p. 367, presumably to save space.

The abbreviations used in the text for museum and private collections (Watt, 1979) are as follows:

AHQA Mr A. Walford-Huggins, Mt Molloy, Qld. AMSA Australian Museum, Sydney. ANIC Australian National Insect Collection, C.S.I.R.O., Canberra. EAQA Mr E. E. Adams, Edungalba, Qld. GWNA Mr G. Williams, Lansdowne, N.S.W. JHQA Mrs J. Harslett, Amiens, Qld. JTNA Mr J. R. Turner, Hill End, N.S.W. KCWA Mr and Mrs K. Carnaby, Wilga, W.A. MNHN Museum Nationale d'Histoire Naturelles, Paris. MPWA Mr M. Powell, Mr M. Golding and Mr T. M. S. Hanlon, Attadale, W.A. PIMA Department of Primary Industry, Mareeba. QMBA Queensland Museum, Brisbane. RMBB L'Institut Royal des Sciences Naturelles de Belgique, Brussels. RTVA Mr R. G. Thompson, Elwood, Vic. SAMA South Australian Museum, Adelaide. WADA Western Australian Department of Agriculture, South Perth. WAMA Western Australian Museum, Perth. ZMHU Museum of Natural Science, Humboldt University, Berlin.

***Stigmodera (Castiarina) tigris* sp. nov.**

FIGS 1P, 4H

*Holotype*. ♂, 5 km W Petford, Qld, 28.i.1978, R. I. Storey, ANIC.

*Paratype*. ♂, Desailly Range, 98.6 km N Mareeba, Qld, 387 m. 13.ii.1973, J. G. Brooks, 'Iron Bark', ANIC.

*Colour*. Head and pronotum black with bronze reflections. Antennae, scutellum, undersurface and legs black. Elytra yellow with following black markings: basal margin; post-medial fascia concave forwards; mark covering pre-apex and apex. Undersurface hairs silver, collar hairs yellow.

*Shape and sculpture*. Head closely punctured, median sulcus, muzzle short. Antennae: segments 1–4 obconic, 5–11 toothed. Pronotum closely punctured, small basal fovea extending forwards as glabrous impressed line almost to apex, basal notches represented by glabrous area on each side, closer to margin than to

middle, area between each and lateral margin slightly depressed; apical margin straight, basal margin bisinuate; laterally parallel-sided at base, rounded out to widest point before middle, rounded and narrowed to apex. Scutellum scutiform, faintly punctured, excavate. Elytra punctate-striate, intervals convex, more so at apex than base, intervals 1–5 from suture moderately punctured, smooth, the rest heavily punctured and rough; laterally angled out from base, rounded at humeral callus, concave until after middle, rounded to bispinose apex; both spines small, margin indented between, apices diverging slightly.

Undersurface closely punctured, moderately hairy, hairs short.  $S_7$  (Sternite 7) truncate in male. Male tarsal pads: on legs 2 & 3 absent on tarsomeres 1–3, each replaced by double median spine.

*Size*. Male, 13.3 × 4.8 mm (2).

*Male genitalia*. Fig. 1P. Largest in *S. sexplagiata* Gory group, typically triangular-shaped. The apices of the parameres are slightly concave and the median lobe broad and sharp.

*Remarks*. Largest member of *S. sexplagiata* Gory group (Fig. 4I). The elytral markings differ from all other species. The specific name is derived from *tigris* L. tiger, alluding to the colour.

***Stigmodera (Castiarina) frauciana* sp. nov.**

FIGS 1Q, 4J.

*Holotype*. ♂, Pine Creek, Bundaberg, Qld, 14.xii.1975, H. Frauca, ANIC.

*Allotype*. ♀, same data as holotype, ANIC.

*Colour*. Head, antennae, pronotum black with blue-green reflections. Scutellum green. Elytra yellow with red margins and following black markings: narrow basal margin; pre-medial fascia expanded anteriorly over humeral callus and posteriorly obliquely to lateral margin; broad post-medial fascia expanded anteriorly at end, touching margin and enclosing yellow spot between two fascia; small pre-apical spade-shaped mark extending down suture and covering apex and spines, all marks connected down suture. Undersurface blue-green. Legs blue. Hairs silver.

*Shape and sculpture*. Head closely punctured, median sulcus, muzzle short. Antennae: segments 1–4 obconic, 5–11 toothed. Pronotum closely punctured, basal fovea extending forwards to anterior margin as deep impressed line, basal notch on each side closer to margin than to middle; apical margin projecting for-

wards in middle, basal margin bisinuate; laterally parallel-sided at base, rounded at middle to apex. Scutellum scutiform, few punctures, excavate in midline. Elytra punctate-striate, scutellary and 3rd interval from suture raised, convex and glabrous, other intervals flat in middle, convex at base, intervals 1 and 2 punctured and wrinkled, subglabrous, rest deeply punctured and rough; laterally sharply angled out from base, rounded at humeral callus (widest part), concave until after middle then rounded and tapered to bispinose apex; marginal spine larger than sutural spine, margin rounded and indented between, apices diverging. Undersurface closely punctured, moderately hairy, hairs medium length.  $S_7$  truncate in male, rounded in female. Male tarsal pads: on legs 2 and 3 absent on tarsomeres 1-3, each replaced by double median spine.

*Size.* Male,  $9.9 \times 3.7$  mm (1)

Female,  $10.5 \times 4.0$  mm (1)

*Male genitalia.* Fig. 1Q. Typical triangular-shape of the *S. sexplagiata* Gory group. The apices of the parameres are almost straight and the median lobe is narrow and pointed. The apophysis of the basal piece is broad.

*Remarks.* A very distinct member of the *sexplagiata* group. The apical spines are small and the ends of the two fascia coalesce forming two yellow spots in the middle of the elytra, the only species in the group where this occurs. Named after Mr H. Frauca, Bundaberg, Qld.

***Stigmodera (Castiarina) cornishi* sp. nov.**

FIGS 1R, 4K.

*Holotype.* ♂, Tallering Station, Pindar, W.A. 4.ix.1976. R. P. McMillan, WAMA.

*Allotype.* ♀, same data as holotype, WAMA.

*Paratypes.* 7 ♂ & 4 ♀, same data as holotype, SAMA, WAMA. ♀, 146 km E Norseman, W.A. 3.x.1977. E. Baker, SAMA. ♂ Balladonia Stn, W.A. on *Myoporum platycarpum*, 25.x.1980, S. Barker & P. G. Kempster, SAMA. ♀, 25 km W Balladonia, W.A. *Eremophila paisleyi*, 17.x.1982, S. Barker, P. G. Kempster & H. Vanderwoude, SAMA. 2 ♂ & ♀, 18 km S-W Derallyna rd, Balladonia district, W.A. *Eremophila scoparia*, 22.x.1982. S. Barker, P. G. Kempster & H. Vanderwoude, SAMA & WAMA.

*Colour.* Head, pronotum and undersurface dull bronze. Antennae, legs, scutellum dark blue. Elytra red with following black markings with blue reflections: basal margin; pre-medial fascia which may be broken into central spot and two lateral broad spots, one in middle of each elytron; post-medial fascia reaching

margin, projecting forwards on suture; spade-shaped mark covering apex, all marks connected down suture. Hairs silver.

*Shape and sculpture.* Head closely punctured median sulcus, muzzle short. Antennae: segments 1-4 obconic, 5-11 toothed. Pronotum closely punctured, basal fovea extending forwards as median impressed line; apical margin straight with well defined collar, basal margin barely bisinuate; laterally rounded from base, widest before middle, rounded to apex. Scutellum scutiform, without punctures, excavate. Elytra, punctate-striate, intervals convex, more so at apex than base, punctured and wrinkled more so at sides than in middle; laterally angled out from base, rounded at humeral callus concave then rounded after middle to bispinose apex; marginal spine small, sutural spine minute, margin rounded and indented between, apices diverging. Undersurface with close shallow punctures, hairy, hairs moderately long.  $S_7$  truncate in male, rounded and indented in middle in female. Male tarsal pads: on legs 2 and 3 absent on tarsomeres 1-3, each replaced by double median spine.

*Size.* Males,  $9.2 \pm 0.22 \times 3.5 \pm 0.07$  mm (11), Females,  $9.5 \pm 0.39 \times 3.7 \pm 0.18$  mm (8).

*Male genitalia.* Fig. 1R. Typical triangular-shaped of the *S. sexplagiata* Gory group. The apices of the parameres are almost straight and the median lobe is narrow and pointed. The apophysis of the basal piece is narrowed.

*Remarks.* This species belongs in the *S. sexplagiata* group. It is closest to *S. vulgaris* Carter (Figs 1S, 4L) but differs in having larger genitalia, the apices of the elytra are rounded and the apical spines small. In *S. vulgaris* the apices are more pointed and the spines larger. *S. cornishi* has a bronze pronotum and undersurface while *S. vulgaris* has a blue pronotum and undersurface. Named after Mr W. Cornish, formerly of Tallering Station, Pindar, W.A.

***Stigmodera (Castiarina) thurmerae* sp. nov.**

FIGS 1T, 7C.

*Holotype.* ♂, 35 km S Diemals, W.A. 31.xii.1981 on *Grevillea nematophylla*, S. Wilson, WAMA.

*Allotype.* ♀, 40 km S Diemals, W.A. 31.xii.1981. M. Powell, WAMA.

*Paratypes.* 5♂, same data as holotype, MPWA; ♂, Murchison District, W.A. Elder Expedition, SAMA.

**Colour.** Head blue. Antennae bronze. Scutellum and undersurface dark blue. Legs dark blue except bases of femora bronze. Elytra pale yellow with the following dark blue markings: basal margin; post-medial fascia reaching margin, projecting forwards in middle of anterior edge, posterior edge concave, projecting forwards and backwards on suture; pre-apical mark covering whole apex, all marks connected down suture. Undersurface hairs silver.

**Shape and sculpture.** Head closely punctured, median sulcus, muzzle short. Antennae compressed; segments 1-3 obconic, 4-11 toothed. Pronotum with close shallow punctures, no basal fovea, variable median impressed line; apical margin projecting forwards strongly in middle, basal margin bisinuate; laterally parallel-sided at base, rounded less than halfway to middle then tapered to apex. Scutellum cordiform without punctures, excavate in middle of anterior margin. Elytra punctate-striate, intervals convex with shallow punctures; laterally angled outwards from base, rounded at humeral callus, concave until after middle, then rounded to hispinose apex; apical spine larger than sutural, margin rounded and indented between, apices slightly diverging, apical margin sub-serrate. Undersurface shallowly punctured, lightly haired,  $S_7$  indented in middle in both sexes. Male tarsal pads: on legs 2 & 3 reduced on tarsomeres 1-3, small single median spine present at base of the reduced pads.

**Size.** Males,  $15.0 \pm 0.22 \times 5.2 \pm 0.11$  mm (6). Females,  $16.7 \times 5.3$  mm (1).

**Male genitalia.** Fig. 1T. The parameres are elongate, broadened out and rounded at the apex. The median lobe is narrow and the apophysis of the basal piece is broad.

**Remarks.** The colour and pattern of this species are similar to those of *S. longicollis* Saunders. However, *S. longicollis* has rounded sides to the pronotum while in *S. thurmerae* the sides of the pronotum are tapered and the pronotum is relatively longer than in other species. The tarsomeres of males resemble the shape of those found in males of *S. quadri-fasciata* Saunders and *S. uptoni* Barker. *S. thurmerae* cannot be grouped with these or any other species at this time. Named after Ms Jenni Thurmer, artist, South Australian Museum.

***Stigmodera (Castiarina) powelli* sp. nov.**

FIGS 1U, 5A.

**Holotype.** ♂, 33 km S Coolgardie, W.A. 14.xi. 1980. *M. Powell*, WAMA.

**Allotype.** ♀, 48 km S Coolgardie, W.A. 14.xi. 1980. *T. M. S. Hanton*, WAMA.

**Paratypes.** ♂, 48 km S Coolgardie, W.A. 14.xi. 1980. *M. Powell*, SAMA; ♀, same data as allotype. MPWA; 2 ♀, S. Aust., SAMA.

**Colour.** Head green at base, blue-green muzzle. Antennae blue-green. Pronotum laterally blue-green, green in middle of each side, black with bronze margin in centre. Scutellum black with bronze reflections. Elytra pale yellow with following black markings: narrow basal margin; triangular spot at base on each side with blunt apex pointing to suture representing an incomplete basal fascia; post-medial fascia reaching margin convex forwards, concave backwards; mark covering pre-apex and apex, last two marks connected down suture. Undersurface and legs blue-green. Hairs silver.

**Shape and sculpture.** Head closely punctured, broad shallow median sulcus, muzzle short and broad. Antennae: segments 1-3 obconic, 4 1-toothed, 5-11 toothed. Pronotum closely punctured, very small basal fovea extending forwards as thin glabrous line until after middle; apical margin straight, basal margin bisinuate; laterally parallel-sided at base, round and broadest before middle, tapered to apex. Scutellum scutiform, punctured, flat. Elytra punctate-striate, intervals convex with shallow punctures; laterally angled out from base, rounded at humeral callus, concave rounded after middle to hispinose apex; marginal spine short and thick, sutural spine minute, margin indented between, apices slightly diverging. Undersurface with close shallow punctures, very short sparse hairs.  $S_7$  rounded in both sexes. Male tarsal pads: on legs 2 & 3, reduced on tarsomeres 1 & 2.

**Size.** Males,  $8.8 \pm 0.5 \times 3.2 \pm 0.2$  mm (2). Females,  $9.4 \pm 0.5 \times 3.5 \pm 0.2$  mm (4).

**Male genitalia.** Fig. 1U. The sides of the parameres are notched as in *S. flavopicta* (Boisduval) (Fig. 1V) but there is a greater distance between the notch and the apex of the parameres. The median lobe in *S. powelli* is rounded whereas in *S. flavopicta* it is angled at the tip.

**Remarks.** Member of *S. flavopicta* group because of similarities in male genitalia and external morphology. Named after Mr M. Powell, Attadale, W.A.

**Stigmodera (Castiarina) alpestris** sp. nov.

FIGS 1W, 6D.

*Holotype*. ♂, Upper Tumut Gorge, N.S.W. 5.ii.1957, 1477 m, *J. G. Filmer*, QMBA.

*Allotype*. ♀, Mt Kosciusko, N.S.W. 27.ii.1951, *P. E. Wilson*, NMVA.

*Paratypes*. ♂, same data as holotype, QMBA; ♂, Lob's Hole, Tumut R., iv.1955, 525 m, *Sedlacek*, ANIC; 2 ♂, same data as allotype, NMVA & SAMA; ♀, Mt Kosciusko, N.S.W. ii.1951, *M. W. Mules*, NMVA; 2 ♂, Mt Buffalo, Vic. 13.i.1955 & 24.ii.1955, *AN*, NMVA; ♂, no data, NMVA.

*Colour*. Head, antennae, pronotum, scutellum, undersurface and legs bright green with gold reflections. Elytra deep yellow with following dark green markings: basal margin; broad pre-medial fascia reaching lateral margin enclosing basal yellow spot and one on margin; broad post-medial fascia; mark covering pre-apex and apex; all marks connected down suture. Hairs silver.

*Shape and sculpture*. Head closely punctured, median sulcus, muzzle short. Antennae: segments 1-4 obconic, 5-11 toothed. Pronotum closely punctured, very small slit-like basal fovea projecting to middle as thin glabrous line, then to margin as impressed line; apical margin projecting forwards in middle, basal margin bisinuate; laterally rounded from base to apex, widest before middle. Scutellum scutiform, punctured, flat. Elytra punctate-striate, intervals flat in middle, convex at apex, with shallow punctures; laterally angled out from base, rounded at humeral callus, concave then rounded to hispinose apex; marginal spine thick and blunt, sutural spine minute, margin indented and rounded between, apices slightly diverging. Undersurface with shallow punctures, very short hairs.  $S_7$  truncate in both sexes. Male tarsal pads: on legs 2 & 3 reduced on tarsomeres 1 & 2.

*Size*. Males,  $9.1 \pm 0.33 \times 3.2 \pm 0.1$  mm (8). Females,  $9.0 \times 3.4$  mm (2).

*Male genitalia*. Fig. 1W. Lateral edges of parameres indented near apex. Median lobe with sharp apex, broadening further down.

*Remarks*. Member of *S. cruentata* (Kirby) species group because of similarities in male genitalia and external morphology. The two Victorian specimens and one from Mt Kosciusko have a peacock blue pronotum. The specific name is derived from *alpestris* L., of high mountains.

**Stigmodera (Castiarina) dingoensis** sp. nov.

FIGS 2A, 5B.

*Holotype*. ♂, 107 km N Dingo, Qld 10.5.1979, *E. E. Adams & S. Barker*, SAMA I 21 138.

*Paratypes*. 3 ♂ & 2 ♀, same data as holotype, SAMA.

*Colour*. Head, antennae, scutellum and pronotum bright green with yellow or reddish reflections. Undersurface and legs bright green. Elytra ivory with thin dark brown basal margin.

*Shape and sculpture*. Head closely punctured, median sulcus, muzzle short. Antennae: segments 1-3 obconic, 4 3-toothed, 5-11 toothed. Pronotum closely punctured, small narrow basal fovea, basal notches obscure; apical margin projecting in middle, basal margin bisinuate; laterally rounded from base, widest before middle, rounded and narrowed to apex. Scutellum scutiform, punctured, flat. Elytra punctate-striate, intervals slightly convex, lightly punctured; laterally angled outwards from base, rounded at humeral callus, slightly concave, rounded after middle then narrowed to hispinose apex; marginal spine larger than sutural, margin rounded and indented between, apices diverging. Undersurface closely punctured, moderately hairy, hairs short.  $S_7$  truncate in both sexes. Male tarsal pads: on legs 2 & 3 absent on tarsomeres 1-3, each replaced by single median spine.

*Size*. Males,  $7.3 \pm 0.26 \times 2.7 \pm 0.09$  mm (4). Females,  $7.6 \times 3.0$  mm (2).

*Male genitalia*. Fig. 2A. Same general shape as in *S. dispar* Blackburn (Fig. 2B), but the median lobe is more acutely angled at the apex than in *S. dispar* and the apophysis of the basal piece is narrower.

*Remarks*. The colour, body shape and genitalia are similar to those of *S. dispar*, which is a larger species and males do not have modified tarsal pads. Because of the last feature I am unable to place this species in a species group. The species name is derived from that of the type locality.

**Stigmodera (Castiarina) hypocrita** sp. nov.

FIGS 2C, 5C.

*Holotype*. ♂, Mt Spec, Qld 9.i.1966, *E. E. Adams*, SAMA I 21 139.

*Allotype*. ♀, Kuranda, Qld xii.1961, *J. G. Brooks*, ANIC.

*Paratypes*. Qld: 2 ♂, Mt Spec, 6 & 9.i.1964, *E. E. Adams*, EAQA; ♂, Mt Spec, i.1966, *J. G. Brooks*, AHMA; ♀, Mt Spec, 12.i.1966, *J. G. Brooks*,



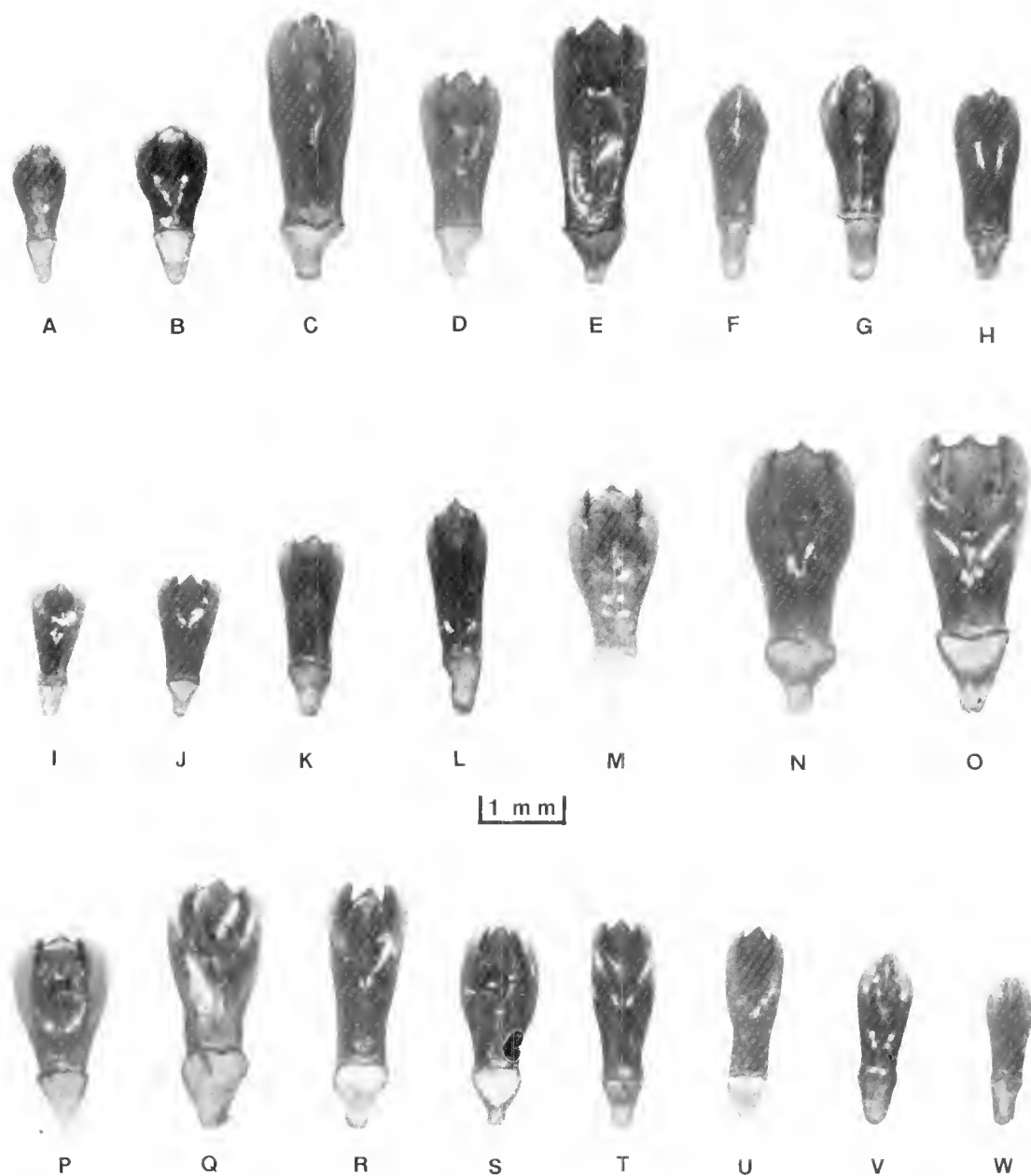


Fig. 2. Photomicrographs of male genitalia of *Stigmodera* (*Castiarina*) species: A. *S. dingoensis*, B. *S. dispar*, C. *S. hypocrita*, D. *S. flavosignata*, E. *S. goldingi*, F. *S. furtiva*, G. *S. scalaris*, H. *S. eneabba*, I. *S. subtestacea*, J. *S. testacea*, K. *S. marginata*, L. *S. kershawi*, M. *S. yellowdinensis*, N. *S. alexandri*, O. *S. cruenta*, P. *S. storeyi*, Q. *S. armstrongi*, R. *S. supergrata*, S. *S. grata*, T. *S. forresti*, U. *S. elderi*, V. *S. goodingi*, W. *S. aurolimbata*.

AHMA; 2♂, 19 & 16 km W Paluma, Ewan Rd, Mt Spec, 10.i.1968, & 8.i.1969, J. G. Brooks, ANIC; ♂, Windsor Rd, via Mt Carbine, 11.ii.1978, R. I. Storey, PIMA; ♂, 42 km N Mt Carbine, 7.i.1978, R. I. Storey, PIMA; ♂, 9 km W Mt Molloy, 30.xii.1981, J. & D. Gardner, SAMA; ♂, Kuranda, French collection, NMVA.

*Colour.* Head and antennae black. Pronotum orange-brown with the following black markings: fascia before middle, ends extended downwards, connected to mark along basal margin by thin median line; forward extension from basal notches on each side, not

reaching ends of pre-medial fascia. Scutellum black. Elytra red-brown with following black markings; basal margin; elongate vitta on each humeral callus; large post-medial mark covering pre-apical and apical area, this can be connected to the vittae, anterior border connected to this mark down suture, expanded in middle to diamond-shaped mark. Undersurface red-brown with sutures and edges of abdominal segments black, legs black with blue reflections. Hairs silver.

*Shape and sculpture.* Head closely punctured, with very short sparse hairs, median sulcus, muzzle short. Antennae: segments 1-3 obconic, 4-11 toothed. Pronotum closely punctured, basal fovea extending forwards to middle as glabrous line, basal notches closer to margin than middle; apical margin straight, basal margin bisinuate; laterally parallel-sided at base, rounded before middle, then tapered to apex. Scutellum scutiform, punctured, flat. Elytra punctate-striate, intervals convex more so at base and apex than in middle, deeply punctured and wrinkled; laterally angled out from base, rounded at humeral callus, concave then rounded after middle to spineless apex; apices rounded and diverging, apical margin subserrate. Undersurface with shallow punctures, sparse very short hair.  $S_7$  rounded in both sexes.

*Size.* Males,  $12.3 \pm 0.28 \times 5.0 \pm 0.14$  mm (9). Females,  $14.5 \times 6.0$  mm (3).

*Male genitalia.* Fig. 2C. Overall size larger than in *S. flavosignata* MacLeay (Fig. 2D). The parameres are parallel-sided towards the apices, the median lobe is narrower and blunter than in *flavosignata* and the apophysis of the basal piece is broader.

*Remarks.* This species belongs in the *S. flavosignata* species group. It is a larger species with black and brown markings whereas *S. flavosignata* has red and blue markings. Both species appear to be bug mimics but the models have not been identified. The specific name is derived from *hypocrita* L., dissembler.

***Stigmodera (Castiarina) goldingi* sp. nov.**

FIGS 2E, 5D.

*Holotype.* ♂, 20 km N Coolgardie, W.A. 20.x.1979, M. Golding, WAMA.

*Paratype.* ♂, 20 km N Coolgardie, W.A. 20.x.1979, M. Powell, MPWA.

*Colour.* Head blue-green. Antennae: segments 1 & 2 blue-green, rest bronze. Pronotum blue-

green in middle, pale red at lateral margins. Scutellum blue. Elytra pale red with following black markings with blue reflections; narrow basal margin; vitta at each humeral callus and an expanded spot on suture, all remnants of a pre-medial fascia; post-medial fascia reaching margin expanded forwards and backwards at suture and in middle of each side; mark covering whole pre-apex and apex, all marks connected down suture. Undersurface: sternum blue; abdomen blue base, rest red; legs blue with blue-green tarsi. Hairs silver.

*Shape and sculpture.* Head closely punctured, broad median sulcus, muzzle short. Antennae: segments 1-3 obconic, 4-11 toothed. Pronotum, close shallow punctures, small basal fovea extending forwards as thin glabrous line to middle then as impressed line almost to margin; apical margin projecting forwards broadly in middle, basal margin barely bisinuate; laterally parallel-sided at base, rounded out and bulbous before middle, tapered to apex. Scutellum scutiform, without punctures, glabrous, excavate in midline. Elytra punctate-striate, intervals convex, more so at apex than in middle and punctured, those at sides more heavily than in middle; laterally parallel-sided at base angled outwards, rounded at humeral callus, concave, rounded after middle and tapered to spineless apex; apical-sutural margin indented, apices diverging. Undersurface with close shallow punctures, moderately hairy, hairs medium length.  $S_7$  rounded in male.

*Size.* Males,  $13.8 \times 5.4$  mm (2).

*Male genitalia.* Fig. 2E. The sides of the parameres are nearly parallel before the apex and at the apex are rounded. The median lobe is broad and the apex is wide angled. The apophysis of the basal piece is broad.

*Remarks.* I am unable to place *S. goldingi* in a species group. Named after Mr M. Golding, Sydney.

***Stigmodera (Castiarina) furtiva* sp. nov.**

FIGS 2F, 5E.

*Holotype.* ♂, Tammin, W.A. H. W. Brown, ANIC.

*Allotype.* ♀, Konningöring, W.A. I.xii.1956, S. Barker, SAMA I 21 143.

*Paratypes.* W.A.: 2 ♀, Red Bluff, W.A. 10.xii.1971, N. McFurland, ANIC; ♂, Tammin, H. W. Brown, ANIC; ♂ & ♀, Beverly, E. F. du Boulay, SAMA; ♂, ANIC; ♂, Bolgart, 19.xi.1978, M. Powell, MPWA; 2 ♂, no data, SAMA; 2 ♂ & ♀, Mullewa, WAMA; 3 ♂ & 3 ♀, 36 km N-E Wubin, 18.x.1977, K. T. Richards, WADA; 4 ♂ & ♀, 60 km N-E

Wubin, 18.x.1977, K. T. Richards, WADA; 4 ♂ & 3 ♀, 64 km N-E Wubin, 18.x.1977, K. T. Richards, WADA; 2 ♂, 72 km N-E Wubin, 22.xi.1977, K. T. Richards, WADA; ♂, Lake Bryde, 23.xi.1972, K. T. Richards, WADA; 3 ♂ & ♀, Lake Grace, 23.xi.1972, K. T. Richards, WADA; 13 ♂ & 4 ♀, East Hyden, 24.xi.1977, K. T. Richards, WADA; ♂, 25 km S Lake King, 15.xi.1980, T. M. S. Hanlon, MPWA; ♀, 110 km E Southern Cross, 20.x.1979, D. Knowles, MPWA; ♀ Lake Ningham, WAMA.

**Colour.** Head and antennae bronze. Pronotum bronze with or without blue reflections at margins. Scutellum, undersurface and legs deep blue. Elytra orange with following black markings with blue reflections: narrow basal margin; pre-medial fascia not reaching margin and pointing forwards at each end; post-medial fascia reaching margin projecting forwards in middle from anterior edge on each side; pre-apical mark connected along suture to post-medial fascia and spines. Hairs silver.

**Shape and sculpture.** Head closely punctured, median sulcus, muzzle short. Antennae: segments 1-4 obconic, 5-11 toothed. Pronotum closely punctured, small basal fovea, basal notches on each side closer to margin than to middle; projecting forwards slightly in middle of apical margin, basal margin barely bisinuate; laterally angled inwards from base then rounded before middle, rounded and narrowed to apex. Scutellum scutiform, punctured, anterior margin excavate. Elytra punctate-striate, intervals rounded more so at apex than base, faint punctures; laterally angled out slightly from base, rounded at humeral callus, concave then rounded after middle and tapered to hispinose apex; spines equal, margin rounded and indented between. Undersurface closely punctured, moderately hairy, hairs short.  $S_7$  truncate in male, faintly bilobed in female.

**Size.** Males,  $9.9 \pm 0.13 \times 3.5 \pm 0.06$  mm (40). Females,  $10.3 \pm 0.21 \times 3.7 \pm 0.1$  mm (20).

**Male genitalia.** Fig. 2F. The genitalia are curved upwards along the longitudinal axis. At the sides the parameres are bulbous before the apex. At the apex the parameres and the median lobe are narrowed. The apophysis of the basal piece is elongate and narrowed. Similarities with the genitalia of *S. scalaris* (Boisduval) (Fig. 2G) are the shape of the median lobe and the curve along the long axis. *S. scalaris* however, has rounded not bulbous sides to the parameres and the median lobe is broader.

**Remarks.** Belongs in *S. scalaris* species group on the basis of similarities in male genitalia and external morphology. This species has been confused with others because of similarities in elytral markings. The specific name is derived from *furtiva* L., concealed.

*Stigmodera* (*Castorina*) *deserti* Blackburn  
1892.

FIGS 1E, 4E.

*Stigmodera deserti* Blackburn, 1892, p. 36, Oberberger, 1934: p. 699.

*Stigmodera arcticollis* Blackburn, 1892, p. 36, Carter 1931: p. 364, 1940: p. 387.

**Holotype.** Not located.

**Colour.** Head, antennae, pronotum, scutellum, undersurface and legs dark blue. Elytra yellow with following dark blue markings: narrow basal margin; pre-medial fascia expanded forwards in middle of anterior edge and projecting forwards and backwards at end not reaching margin, in some specimens reduced to a spot on each humeral callus and one on suture; post-medial fascia reaching margin, projecting forwards in middle of anterior edge, concave backwards; mark covering apex and spines, all marks connected down suture. Hairs silver.

**Shape and sculpture.** Head close shallow punctures, shallow median sulcus, eyes bulbous, muzzle short. Antennae compressed; segments 1-3 obconic, 4-11 toothed. Pronotum shallowly punctured, minute basal fovea; projecting forwards broadly in middle of apical margin, basal margin almost straight; laterally parallel-sided at base then broadened and rounded after middle and narrowed to apex. Scutellum scutiform, without punctures, flat. Elytra punctate-striate, intervals flat in middle convex at sides and apex; laterally slightly angled out from base rounded at humeral callus, straight until after middle, rounded and tapered to pre-apex then rounded to hispinose apex; marginal spine larger than minute sutural spine, margin angled and indented between, apices diverging, apical margin sub-serrate. Undersurface with shallow punctures, sparse short hairs.  $S_7$  truncate in male, round in female.

**Size.** Males,  $6.9 \times 2.4$  mm (4), Female,  $6.5 \times 2.0$  mm (1).

**Specimens examined.** W.A.: ♂, Yampie Gorge, 26.vii.1967, F. H. Uther Baker, SAMA; ♂, Carnarvon, 24.viii.1975, R. P. McMillan, SAMA; ♂ & ♀, Lake Austin, H. W. Brown, SAMA; ♂, Murchison, SAMA; ♂, Wittnoom Gorge, 23.viii.1972, S. M. Wylie, WAMA.

*Remarks.* Belongs in *S. atricollis* Saunders species group, but is a much smaller species and male genitalia differ (p. 142).

***Stigmodera* (*Castiarina*) *eneabba* sp. nov.**

FIGS 2H, 5F.

*Holotype.* ♂, Eucabba, W.A. 10.x.1970, K. & E. Carnaby, SAMA.

*Allotype.* ♀, 60 km E Hyden, 18.x.1981, D. Knowles, WAMA.

*Paratypes.* W.A.: 2 ♂, Eucabba, K. & E. Carnaby, KCWA; ♂, 98 km E Southern Cross, Boorabbin Rocks N. P., 5.x.1981, R. Thorpe, MPWA.

*Colour.* Head, antennae, pronotum, scutellum, undersurface and legs bright green. Elytra yellow with following black markings: narrow basal margin; either small spot on each humeral callus and larger pair close together on either side of suture, or with one of either pair missing, remnants of pre-medial fascia; post-medial fascia reaching margin, projecting forwards on suture; mark covering apex and spines, connected along suture to post-medial fascia. Hairs silver.

*Shape and sculpture.* Head closely punctured, broad median sulcus, muzzle very short. Antennae compressed: segments 1–3 obconic, 4–11 toothed. Pronotum closely punctured, minute basal fovea extending forwards as glabrous line to middle, basal notches represented by glabrous areas on each side: apical margin projecting forwards in middle, basal margin bisinuate; laterally gently angled outwards until after middle then rounded to apex. Scutellum scutiform, glabrous, flat. Elytra punctate-striate, intervals slightly convex at base more so at apex, deeply punctured at sides, shallowly in middle; laterally angled outwards from base, rounded at humeral callus concave then rounded after middle, narrowed to hispinose apex; marginal spine sharp, sutural spine minute, margin rounded and indented between. Undersurface hairs very short and sparse.  $S_7$  broadly truncate in male, narrowly truncate in female.

*Size.* Males,  $10.8 \pm 0.13 \times 3.5 \pm 0.07$  mm (4). Female,  $12.8 \times 4.3$  mm (1).

*Male genitalia.* Fig. 2H. The parameres are rounded and narrow towards the apex while those of *S. atricollis* Saunders (Fig. 1F) broaden out before they round off at the apex. The apex of the median lobe is sharp and broadly angled while the apophysis of the basal piece is slightly broader than that in *atricollis*.

*Remarks.* This species belongs in the *atricollis* species group as the genitalia show similarities to *atricollis* and the external morphology is similar. They are quite distinct as apart from the elytra, the rest of the body is green while in *atricollis* it is blue. The specific name is derived from the name of the type locality.

***Stigmodera* (*Castiarina*) *subtestacea* sp. nov.**

FIGS 2I, 5G.

*Holotype.* ♂, Piawanning, W.A. 28.i.1951, R. P. McMillan, WAMA.

*Allotype.* ♀, same data as holotype, WAMA.

*Paratypes.* W.A.: 2 ♂, same data as holotype, SAMA; ♂ & ♀, Perth, xi.1953, E.S., SAMA; ♂, 16 km S Borden, 27.ii.1956, J. A. L. Watson, SAMA; 3 ♂, Lake Grace, SAMA; ♂, Lake Bryde, 16.xii.1974, K. T. Richards, WADA; ♂, 20 km N Hatters Hill, 23.i.1975, K. T. Richards, WADA; 3 ♂ & ♀, Lake Grace, 20.i.1930, H. W. Brown, NMVA; ♂ & 3 ♀, Lake Grace, H. W. Brown, NMVA; 4 ♂, Lake Grace, H. W. Brown, WAMA; 3 ♂ & ♀, Cranbrook, 4.ii.1954, A. Douglas, WAMA; ♂, Dedari, H. W. Brown, WAMA; 2 ♂ & ♀, Piawanning, WAMA; ♂, Kakerin, WAMA; 3 ♂ & ♀, Kojonup, 31.xii.1978, R. P. McMillan, WAMA; 3 ♂, Kojonup, 1.i.1979, R. P. McMillan, WAMA; 4 ♂ & 3 ♀, Kojonup, 3.i.1979, R. P. McMillan, WAMA. S. Aust.: ♂, no data, SAMA.

*Colour.* Head brown. Antennae, pronotum, scutellum, undersurface and legs testaceous with transparent spotting. Elytra the same, most specimens with brown apical mark. Hairs silver.

*Shape and sculpture.* Head closely punctured, shallow median sulcus, muzzle short. Antennae: segments 1–4 obconic, 5–11 toothed. Pronotum closely punctured, small basal fovea, basal notches on each side, closer to margin than to middle; apical margin straight, basal margin bisinuate; laterally rounded from base to apex, widest before middle then narrowed to apex. Scutellum scutiform, small, without punctures, flat. Elytra punctate-striate, intervals convex; laterally slightly angled out from base, rounded at humeral callus then straight until after middle, round and tapered to hispinose apex; marginal spine larger than sutural, margin rounded and indented between, apices diverging. Undersurface closely and shallowly punctured, sensory bristles on either side of midline on meso- and metasternum in male, rest virtually hairless except for ventral collar.  $S_7$  truncate in male, rounded in female.

*Size.* Males,  $7.6 \pm 0.09 \times 2.7 \pm 0.03$  mm (36). Females,  $7.9 \pm 0.21 \times 2.7 \pm 0.07$  mm (12).

*Male genitalia.* Fig. 2I. The sides of the parameres are angled outwards near the apex and then rounded off. The median lobe is sharp and broadly angled and the apophysis of the basal piece is slightly elongate compared with that of *S. testacea* Saunders (Fig. 2J).

*Remarks.* In an earlier paper (Barker, 1979) I erroneously placed 9 of the above specimens in the new species *S. crockerae*. This is a smaller species than *S. crockerae* and resembles *S. testacea* Saunders more closely but is not costate. *S. testacea*, *S. crockerae*, *S. subtastacea* and *S. nigriceps* Barker seem to be members of a ring species complex. They are all cryptic as they mimic the colour of the eucalypt flowers on which they are found. The locality label on the single male in the SAMA collection designated from S. Aust. may be incorrect. The specific name is derived from *sub* L., under *testacea*.

***Stigmodera (Castiarina) marginata* sp. nov.**

FIGS 2K, 5H.

*Holotype.* ♂, Sellick's scrub, Aldinga, S. Aust. 24.x.1978, *S. Barker*, SAMA I 21 144.

*Allotype.* ♀, Sellick's scrub, Aldinga, S. Aust. 31.x.1978, *P. Christy*, SAMA I 21 145.

*Paratypes.* S. Aust.: 15 ♂, same data as holotype, SAMA; ♂, same data as allotype, SAMA; 3 ♂, S-W River, Kangaroo Isd, 23.xi.1967, *S. Barker*, SAMA; ♂, Edillilie, Eyre Peninsula, 7.xii.1968, *N. McFarland*, SAMA; ♀, Upper Torrens Gorge, 4.xi.1967, *S. Barker*, SAMA; ♂ & ♀, Sellick's scrub, Aldinga, 27.x.1972, *S. Barker*, SAMA; ♂ & ♀, Flinders Chase, Kangaroo Isd, 27.xi.1972, *S. Barker*, SAMA; ♂, Pt Lincoln, 16.xi.1974, *S. Barker*, SAMA; ♂, Uraidla, 26.xii.1974, *A. Wells*, SAMA; ♂, Sellick's scrub, Aldinga, 4.xi.1978, *S. Barker*, SAMA; ♂ & 2 ♀, Flinders Chase, Kangaroo Isd, 29.xi.1978, *S. Barker*, SAMA; 3 ♂ & ♀, Pt Lincoln, *Blackburn*, SAMA; ♀, Murray Bridge, SAMA; ♀, Kangaroo Isd, *J. G. O. Tepper*, SAMA; ♀, Lucindale, SAMA; ♀, SAMA, 2 ♀, Aust. *W. White*, SAMA; ♂, xi.1901, French, SAMA; ♂ & ♀, no data, SAMA.

*Colour.* Head blue. Antennae green. Pronotum blue. Scutellum, undersurface and legs deep blue. Elytra pale yellow with red lateral margins and the following black markings with blue reflections: narrow basal margin; pre-medial fascia expanded forwards to humeral callus not touching margin; post-medial fascia touching margin projecting forwards on suture; mark covering apex and spines, all marks connected down suture. Hairs silver.

*Shape and sculpture.* Head closely punctured, broad median sulcus, muzzle short. Antennae: segments 1-4 obovate, 5-11 toothed. Pronotum closely punctured, shallow basal fovea;

apical margin straight, basal margin bisinuate; laterally parallel-sided at base, rounded before middle, then tapered to apex. Scutellum scutiform, punctured, flat. Elytra punctate-striate, intervals convex, more so at base than apex, punctured and wrinkled progressively more so from suture to margin; laterally angled outwards from base, rounded at humeral callus, concave then rounded after middle and tapered, angled inwards just before bispinose apex; marginal spine sharp, sutural spine minute, margin rounded and indented between, apices diverging, most of margin punctured and rough. Undersurface closely punctured, moderately long dense hair.  $S_7$  truncate in both sexes.

*Size.* Males,  $10.3 \pm 0.13 \times 3.8 \pm 0.05$  mm (33). Females,  $10.5 \pm 0.23 \times 4.2 \pm 0.12$  mm (13).

*Male genitalia.* Fig. 2K. The sides of the parameres are angled out more than in *S. kershawi* Carter (Fig. 2L) and the apophysis of the basal piece is shorter. The median lobe is sharp and the sides angled at the same degree as in *S. kershawi*.

*Remarks.* This species belongs to the *S. bella* Saunders species group of which *S. kershawi* Carter is also a member. *S. kershawi* has red elytra and occurs in high country in Vic. and N.S.W. *S. marginata* has yellow elytra with red margins and occurs at low altitude in South Australia. The specific name is derived from *marginatus* L. enclose with a border and alludes to the red margin.

***Stigmodera (Castiarina) yellowdinensis* sp. nov.**

FIGS 2M, 5I.

*Holotype.* ♂, Yellowdine, W.A. 8.i.1980, *M. Golding*, WAMA.

*Allotype.* ♀, 8 km E Yellowdine, W.A. 13.xi.1980, *M. Powell*, WAMA.

*Paratype.* ♂, same data as holotype, SAMA.

*Colour.* Head, antennae, pronotum, scutellum and legs bronze. Elytra yellow with following black markings with blue reflections: narrow basal margin; oblique spot on each humeral callus and post-medial spot towards margin but not touching it, elongate spot at same level on suture; small mark covering apex, heavy mark from scutellum down suture not reaching middle. Undersurface: sternum bronze; abdomen testaceous. Hairs silver.

*Shape and sculpture.* Head closely punctured, median sulcus, muzzle short. Antennae: segments 1-3 obovate, 4-11 toothed. Pronotum

closely punctured, small basal fovea extending forwards to middle as thin glabrous line, basal notches represented by small glabrous areas; apical margin projecting forwards in middle, basal margin barely bisinuate; laterally parallel-sided at base, rounded to widest point before middle, tapered to apex. Scutellum scutiform, punctured, flat. Elytra punctate-striate, intervals convex and punctured; laterally parallel-sided at base, angled outwards then rounded at humeral callus, concave, rounded after middle to bispinose apex; apical spine larger than sutural, margin rounded and indented between apices slightly diverging, apical margin sub-serrate. Undersurface with shallow punctures, short hairs.  $S_7$  rounded in males, truncate in females.

*Size.* Males,  $12.0 \times 4.4$  mm (2). Female,  $13.9 \times 5.4$  mm (1).

*Male genitalia.* Fig. 2M. The sides of the parameres are parallel towards the apex where they are rounded. There is a small point in the apex of the median lobe and the sides are then angled outwards. In *S. alexandri* Carter (Fig. 2N) the sides of the parameres are rounded before the apex and there is a small point at the apex of the median lobe but the sides have a greater outward angle. The apophysis of the basal piece of *S. yellowdinensis* is comparatively wider than that of *S. alexandri*. Both species belong in the *S. cruenta* L. & G. species group (Fig. 2O).

*Remarks.* Belongs in *cruenta* species group on basis of similarities in male genitalia, external morphology and testaceous abdomen. Closest to *S. alexandri* Carter. The specific name is derived from the name of the type locality.

***Stigmodera (Castiarina) storeyi* sp. nov.**

FIGS 2P, 5J.

*Holotype* ♂, Desailly Ra, 101 km N Mareeba, Qld 25.i.1973, A. & M. Walford-Huggins, QMBA.

*Allotype* ♀, Mt Carbine, Qld 7.i.1981, S. Barker, SAMA.

*Colour.* Head, pronotum and sternum dull purple with blue reflections. Antennae and scutellum blue-green. Legs: femora blue-green; dorsal tibia purple, ventral tibia blue-green; tarsi blue-green. Abdomen testaceous. Elytra pale yellow with following markings: narrow blue-green basal margin; elongate black mark on each humeral callus angled outwards towards margin; narrow elongate pre-medial black mark on suture; narrow black post-

medial fascia not reaching margin; black mark covering apex, last two connected down suture. Hairs silver.

*Shape and sculpture.* Head closely punctured, deep median sulcus, muzzle short. Antennae: segments 1-3 obconic, 4-11 toothed. Pronotum closely punctured, small deep basal fovea surrounded by glabrous area without punctures, basal notches closer to margin than middle, glabrous patch without punctures above basal angle; projecting forwards in middle of apical margin, basal margin barely bisinuate; laterally parallel-sided at base, then rounded to widest part before middle, rounded and narrowed to apex. Scutellum scutiform, few punctures, flat. Elytra punctate-striate, intervals convex, more so at apex than base, punctured and progressively more wrinkled from suture to margin; 3 pairs of striae closer together than others so that intervals 4, 6 & 8 are narrower than rest; laterally slightly angled out from base, rounded at humeral callus, concave then rounded after middle to bispinose apex; marginal spine larger than sutural, margin rounded and indented between apices diverging, apical margin subserrate.  $S_7$  truncate in male, rounded and indented in middle in female.

*Size.* Male,  $11.8 \times 3.9$  mm (1). Female,  $11.8 \times 4.5$  mm (1).

*Male genitalia.* Fig. 2P. The sides of the parameres are rounded and expanded outwards towards the apex. The apex of the median lobe is sharp and the sides are angled outwards. The apophysis of the basal piece is thick and the whole aedeagus is short and thick.

*Remarks.* This species belongs in *S. cruenta* L. & G. species group on the basis of male genitalia, testaceous abdomen and external morphology. Distinguished from other members by alternately normal and narrow striae on elytra. Named after Mr R. I. Storey, Mareeba, Qld.

***Stigmodera (Castiarina) armstrongi* sp. nov.**

FIGS 2Q, 6A.

*Holotype* ♂, Bogon R., N.S.W. J. Armstrong, QMBA.

*Allotype* ♀, Minnie Downs Stn. S. Ausl. L.C., SAMA I 21 146.

*Paratypes.* ♀, same data as holotype, JHQA; ♀, same data as holotype, ANIC; ♂ & ♀, Nockatunga, Qld 13.xi.1949, E. F. Riek, ANIC, SAMA; ♂, 19 km N Tennant Creek, N.T. C. Rache, AHQA.

*Colour.* Head, antennae, pronotum, scutellum, sternum and legs green, blue-green or blue,

Abdomen testaceous except at sides of base which usually has an elongate mark of blue or blue-green. Elytra pale yellow with the following markings: narrow basal margin green or blue-green in some specimens, extending short distance down suture; single dark blue post-medial spot in middle of each elytron; broad dark blue semi-circular mark concave forwards covering apical region, the sides reduced in some specimens. Hairs silver.

*Shape and sculpture.* Head with close shallow punctures, broad median sulcus, muzzle short. Antennae: segments 1-3 obconic, 4-11 toothed. Pronotum with shallow punctures, sparse and smaller in middle than at sides, very small basal fovea extending forwards as glabrous line of variable length, basal notches closer to margin than to middle; projecting forwards in middle of apical margin, basal margin almost straight; laterally parallel-sided at base, rounded and bulbous before middle, rounded and narrowed to apex. Scutellum scutiform, narrow and glabrous. Elytra punctate-striate, intervals convex, more so at base and apex than middle, lightly punctured and wrinkled; laterally angled out slightly from base, rounded at humeral callus, concave then rounded after middle, rounded and narrowed to bispinose apex; marginal spine small and blunt but larger than sutural spine, margin rounded and indented between, apices diverging, apical margin sub-serrate. Undersurface with close shallow punctures, very sparse short hairs.  $S_7$  truncate in male, rounded in female.

*Size.* Males, 13.2 × 4.9 mm (3). Females, 14.3 × 5.3 mm (4).

*Male genitalia.* Fig. 2Q. The sides of the parameres are parallel after the middle, then rounded towards the apex. The median lobe has a pointed apex and the sides are angled outwards. The apophysis of the basal piece is broad.

*Remarks.* Belongs to *S. cruentata* L. & G. species group on the basis of similarities in male genitalia, external morphology and testaceous abdomen. Named after Mr J. Armstrong, formerly of Callubri Station, Nyngan, N.S.W.

***Stigmodera (Castiarina) supergrata* sp. nov.**

FIGS 2R, 6B.

*Holotype.* ♂, Moe, Vic. 20.xi.1944, C. G. L. Gooding, ANIC

*Allotype.* ♀, Moe, Vic. 5.xi.1955, C. G. L. Gooding, ANIC.

*Paratypes.* Vic.: ♂ & 5 ♀, Moe, 15.xi.1947, 15.x.1944, 18.xi.1954, 5.xi.1945, C. G. L. Gooding, ANIC; ♀, Rokeby, 21.xi.1958, C. G. L. Gooding, EAQA; ♂, Moorooduc, 13.xi.1920, SAMA; ♀, Healesville, xi.1922, J. E. Dixon, ANIC; ♂ & ♀, Drouin Stn, 6.xii.1958, C. G. L. Gooding, ANIC; ♂, 21 km Shady Crk, Willow Grove Rd, 5.xi.1963, C. G. L. Gooding, ANIC; 2 ♂, 3.2 km S, Willow Grove, 26.xi.1966, C. G. L. Gooding, ANIC; ♂, Rokeby, xi.1975, C. Elton, ANIC; ♀, Hall's Gap, 14.xi.1950, LeSouef, SAMA; ♀, Oakleigh, SAMA; ♂ & 2 ♀, 12 km N Hall's Gap, 7.xi.1979, G. & T. Williams, GWNA; 3 ♂ & ♀, Brisbane Hills, 22.x.1972, R. G. Thompson, RTVA; 2 ♂, Brisbane Hills, 29.x.1972, R. G. Thompson, RTVA; ♂ & ♀, Tea Tree Crk, 9.xi.1949, B. Given, NMVA; ♂ & ♀, Mt Dandenong, 12.xii.1948, F. E. Wilson, NMVA; ♀, Belgrave, 19.xii.1923, L. B. Thorn, NMVA; ♂ & ♀, Emerald, 19.xi.1903, J.K., NMVA; ♂, Grampians, 15.xi.1945, NMVA; ♂, Grampians, xi.1942, NMVA; ♀, Croydon, NMVA; ♀, Berwick, NMVA; ♀, Warburton, i.1902, NMVA; ♀, Dandenong Ranges, 20.iv.1922, NMVA, N.S.W.: ♀, 1 km W Mt Wilson, Bell Rd, 4.xii.1977, G. & T. Williams, GWNA.

*Colour.* Head dark blue, Antennae green. Pronotum dark blue, lateral margins red. Scutellum dark blue. Elytra red with following dark blue markings: broad pre-medial fascia extending from basal margin almost to middle not touching margin; broad post-medial fascia touching margin; mark covering pre-apical and apical region, all marks connected down suture. Undersurface blue-green. Hairs silver.

*Shape and sculpture.* Head closely and shallowly punctured, deep median sulcus, muzzle short. Antennae: segments 1-3 obconic, 4-11 toothed. Pronotum closely but shallowly punctured; basal fovea extending forwards to middle as thin glabrous impressed line, small basal notch on each side, closer to margin than middle; projecting forwards in middle of apical margin, basal margin almost straight; laterally slightly angled outwards from base, rounded before middle, then rounded and narrowed to apex. Scutellum scutiform, without punctures, excavate. Elytra punctate-striate, intervals convex, more so at apex than base, deeply punctured and wrinkled; laterally angled outwards from base, rounded at humeral callus, concave then rounded after middle and narrowed to spineless apex; apices rounded and diverging. Undersurface with close shallow punctures, moderately hairy, hairs short.  $S_7$  slightly rounded in male, rounded in female.

*Size.* Males, 13.0 ± 0.32 × 4.8 ± 0.13 mm (17). Females, 13.6 ± 0.16 × 5.2 ± 0.08 mm (25).

*Male genitalia.* Fig. 2R. Sides of parameres straight from the middle and angled outwards,

abruptly rounded then flattened at the apex. The apex of the median lobe is pointed and the sides angled outwards. The apophysis of the basal piece is broad. They differ from the genitalia of *S. grata* Saunders (Fig. 2S) which are smaller, the sides of the parameres are angled inwards from the middle and the apophysis of the basal piece is narrow.

*Remarks.* This species belongs in *S. grata* Saunders species group but is larger than *grata*, the male genitalia are different and the elytral colour darker red. The specific name is derived from *super* L. over, *grata*.

***Stigmodera (Castiarina) forresti* sp. nov.**

FIGS 2T, 6C.

*Holotype.* ♂, 10 km W Gasecoyne Junction, W.A. 22.ix.1980, S. Barker & D. J. Williams, WAMA.

*Allotype.* ♀, same data as holotype, WAMA.

*Paratypes.* 12 ♂ & 14 ♀, same data as holotype (WAMA & SAMA); ♂, 89 km N Carnarvon, W.A. 22.ix.1980, S. Barker & D. J. Williams, SAMA.

*Colour.* Head bronze with purple reflections at the base, large yellow frontal spot, mouthparts blue-green. Antennae blue-green. Pronotum bronze with purple reflections and yellow lateral margins. Scutellum dark blue with purple reflections. Elytra pale yellow with dark orange margins two intervals wide and the following dark blue markings: narrow basal margin; pre-medial fascia, not reaching lateral margin, ends extending forwards obliquely over humeral callus; post-medial fascia reaching margin; mark covering whole of pre-apex and apex, all marks connected down suture. Under-surface yellow, edges of sutures on meso-sternum blue-green, blue-green spot at sides of abdominal segments, edges of abdominal segments blue-green or testaceous. Legs blue-green. Hairs silver.

*Shape and sculpture.* Head with shallow punctures, no median sulcus, muzzle short. Antennae: segments 1-4 obconic, 5-11 toothed. Pronotum closely punctured; small basal fovea, basal notches on each side closer to margin than middle; projecting forwards slightly in middle of apical margin, basal margin barely bisinuate; laterally parallel-sided at base, then rounded to apex, widest in middle. Scutellum scutiform, without punctures, slightly wrinkled, excavated in middle. Elytra punctate-striate, intervals convex more so at apex than base, punctured and wrinkled; laterally angled out for short distance from

base, rounded at humeral callus (widest point), concave and rounded after middle, rounded and narrowed to trispinose apex; middle spine largest, margin rounded between outer and middle spine, rounded and indented between middle and sutural spine. Under-surface with very shallow punctures, sparse short hair,  $S_7$  truncate in male, faintly bilobed in female.

*Size.* Males,  $11.0 \pm 0.3 \times 3.9 \pm 0.07$  mm (14). Females,  $12.2 \pm 0.23 \times 4.4 \pm 0.1$  mm (15).

*Male genitalia.* Fig. 2T. The sides of the parameres are parallel after the middle then rounded to the apex. The apex of the median lobe is pointed and the sides angled outwards. The apophysis of the basal piece is of median width. The genitalia of *S. elderi* Blackburn (Fig. 2U) are of the same length but with narrower apices to the parameres.

*Remarks.* All specimens were collected on the flowers of *Verticordia forresti*. Belongs in *S. elderi* Blackburn species group because of similarities in male genitalia and external morphology, *S. forresti* is a larger species than *S. elderi*. The basal elytral colour of *S. elderi* is red. Named after the late Lord Forrest.

***Stigmodera (Castiarina) goodingi* sp. nov.**

FIGS 2V, 6E.

*Holotype.* ♂, Ward's Mistake, N.S.W. xii.1952, A. Champion, ANIC.

*Allotype.* ♀, same data as holotype, ANIC.

*Paratypes.* 4 ♂ & 4 ♀, same data as holotype (3 ♂ & 3 ♀ ANIC, ♂ & ♀ SAMA).

*Colour.* Head, antennae, pronotum, under-surface and legs green with gold reflections. Scutellum bright green. Elytra testaceous with following markings: narrow bright green basal margin; elongate angled spot at humeral callus, outer part bright green, inner black; single post-medial black spot on each elytron, closer to margin than suture; thick bright green border continuous with basal margin surrounding scutellum and running down suture to apex covering spines, thin outer edge black. Hairs silver.

*Shape and sculpture.* Head very closely punctured, deep median sulcus, muzzle short. Antennae: segments 1-3 obconic, 4-11 toothed. Pronotum very closely punctured, small basal fovea, basal notches closer to margin than middle; anterior margin straight, basal margin bisinuate; laterally parallel-sided until before middle, then rounded and nar-



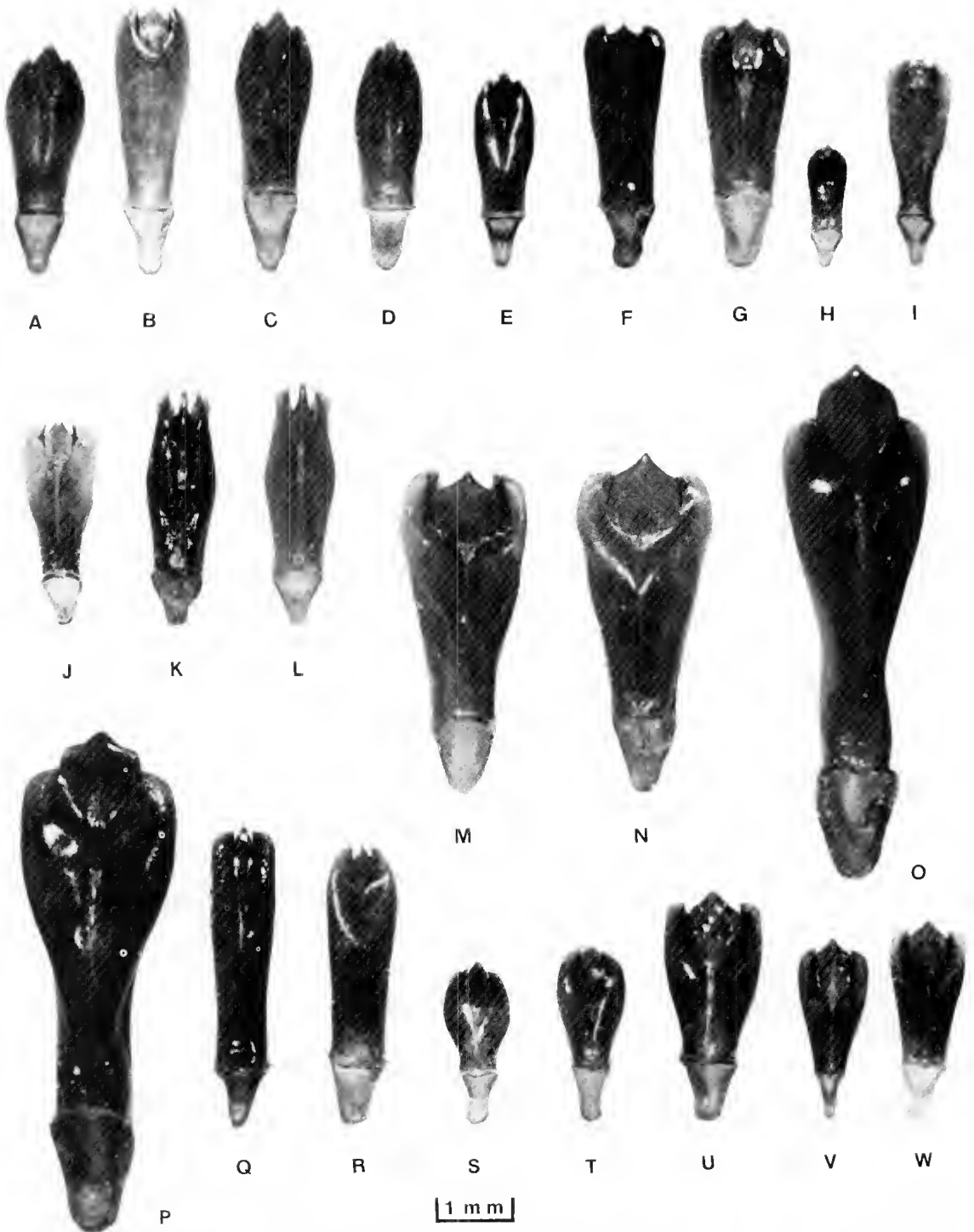


Fig. 3. Photomicrographs of male genitalia of *Stigmodera* (*Castiarina*) species: A. *S. kalbarri*, B. *S. trifasciata*, C. *S. boldensis*, D. *S. dimidiata*, E. *S. leai*, F. *S. variegata*, G. *S. coerulipes*, H. *S. pseuderythroptera*, I. *S. hanloni*, J. *S. octomaculata*, K. *S. subvicina*, L. *S. distincta*, M. *S. scintillata*, N. *S. variopicta*, O. *S. semicincta*, P. *S. jeanae*, Q. *S. triramosa*, R. *S. simulata*, S. *S. chinnocki*, T. *S. cupricauda*, U. *S. turneri*, V. *S. euclae*, W. *S. convexa*.

rowed to apex. Scutellum scutiform, punctured, excavate in midline. Elytra punctate-striate, 9th interval from suture raised over entire length, margin flattened, intervals lightly punctured and slightly wrinkled; laterally angled out slightly from base, rounded at humeral callus concave then rounded after middle and tapered, rounded again just before bispinose apex; marginal spine larger than sutural, margin rounded and indented between, apices diverging. Undersurface closely punctured, sparse short hair.  $S_7$  truncate in male, rounded and indented in female.

*Size.* Males,  $8.4 \pm 0.2 \times 3.2 \pm 0.1$  mm (5). Females,  $8.9 \pm 0.2 \times 3.5 \pm 0.1$  mm (5).

*Male genitalia.* Fig. 2V. The sides of the parameres are angled outwards from the basal piece upwards then rounded near the apex with sharp points at the apices. The median lobe is thin and pointed at the apex. The apophysis of the basal piece is broad. The genitalia of *S. urolimbata* Carter (Fig. 2W) are similar but smaller and the median lobe is even more pointed at the apex and the apophysis of the basal piece is not as broad at the base but rounded outwards just before the apex.

*Remarks.* Superficially like *S. hillaris* Hope but larger and male genitalia differs. Grouped with *S. urolimbata* Carter on the basis of male genitalia and external morphology. Named after the late Mr C. G. Gooding.

***Stigmodera (Castiarina) kalbarri* sp. nov.**

FIGS 3A, 6F.

*Holotype.* ♂, 44 km E Kalbarri, W.A. 26.ix.1980, S. Barker & D. J. Williams, WAMA.

*Allotype.* ♀, 46 km E Kalbarri, W.A. 26.ix.1980, S. Barker & D. J. Williams, WAMA.

*Paratypes.* 3 ♂, same data as holotype, SAMA & WAMA; 2 ♀, same data as allotype, SAMA & WAMA; ♂, Kalbarri, W.A. 10.x.1979, M. Golding, MPWA; ♂, 13 km N Murchison River, W.A. 10.x.1979, M. Powell, MPWA; 2 ♀, Northampton, W.A. 28.viii.1971 & 31.viii.1973, K. T. Richards, WADA.

*Colour.* Head, antennae, scutellum, undersurface and legs green with gold reflections. Pronotum green with gold reflections and in some specimens a dull bronze patch in middle. Elytra orange with following black markings with blue-green reflections: narrow basal margin; pre-medial fascia, not reaching lateral margin and angled forwards over humeral callus; post-medial fascia reaching margin projecting forwards and backwards along

suture; pre-apical spade-shaped mark also covering apex and spines, all marks connected down suture. Hairs silver.

*Shape and sculpture.* Head closely punctured, broad median sulcus, muzzle very short. Antennae compressed; segments 1-3 obconic, 4-11 toothed. Pronotum closely punctured, minute basal fovea extending forwards as glabrous line to middle, basal notches on each side represented by broad glabrous area; apical margin projecting forwards in middle, basal margin barely bisinuate; laterally parallel-sided at base, rounded after middle and narrowed to apex. Scutellum scutiform, without punctures, excavate along anterior margin. Elytra punctate-striate, intervals flat at base, convex at apex, punctured and wrinkled; laterally angled out from base, rounded at humeral callus, concave then rounded after middle and narrowed to bispinose apex; large marginal spine, minute sutural spine, margin rounded and indented between, apices diverging, apical margin subserrate. Undersurface hairs long and sparse.  $S_7$  broadly truncate in male, narrowly truncate and indented in female.

*Size.* Males,  $11.8 \pm 0.4 \times 4.3 \pm 0.14$  mm (8). Females,  $12.8 \pm 0.82 \times 4.7 \pm 0.29$  mm (4).

*Male genitalia.* Fig. 3A. The sides of the parameres are rounded after the middle and bulge outwards before they are rounded off to the apex. The median lobe is pointed and the sides are acutely angled. The apophysis of the basal piece is of medium width. The genitalia of male *S. trifasciata* L. & G. (Fig. 3B) are longer, the sides of the parameres are parallel after the middle then rounded to the apices, the apex of the median lobe is pointed but the sides are not acutely angled. The apophysis of the basal piece is of medium width and slightly elongate.

*Remarks.* Belongs in *S. trifasciata* L. & G. species group because of similarities in male genitalia and external morphology. All specimens taken on 26.ix.1980 were captured on the flowers of *Thryptomena denticulata* (F. Muell.) Benth. The species name is derived from the name of the type locality.

***Stigmodera (Castiarina) holdensis* sp. nov.**

FIGS 3C, 6G.

*Holotype.* ♂, Wembley, W.A. H. W. Brown, SAMA.

*Allotype.* ♀, same data as holotype, SAMA.

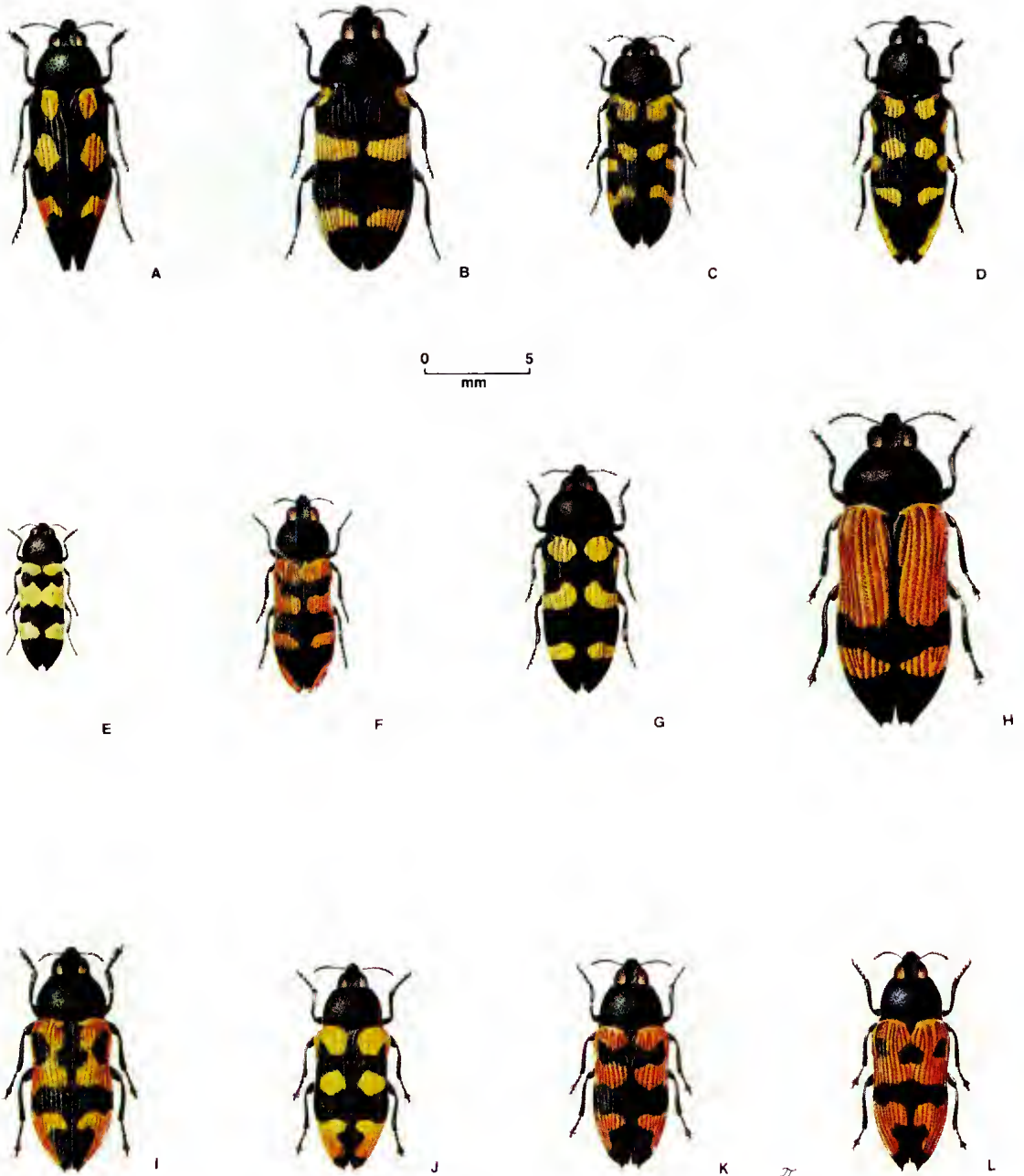


Fig. 4. A. *Stigmodera delicatula* Kerremans, B. *S. subvicina* sp. nov., C. *S. decemguttata* L. & G., D. *S. versicolor* L. & G., E. *S. deserti* Blackburn, F. *S. sieboldi* L. & G., G. *S. timida* Kerremans, H. *S. tigris* sp. nov., I. *S. sexplagiata* Gory, J. *S. frauciana* sp. nov., K. *S. cornishi* sp. nov., L. *S. vulgaris* Carter.

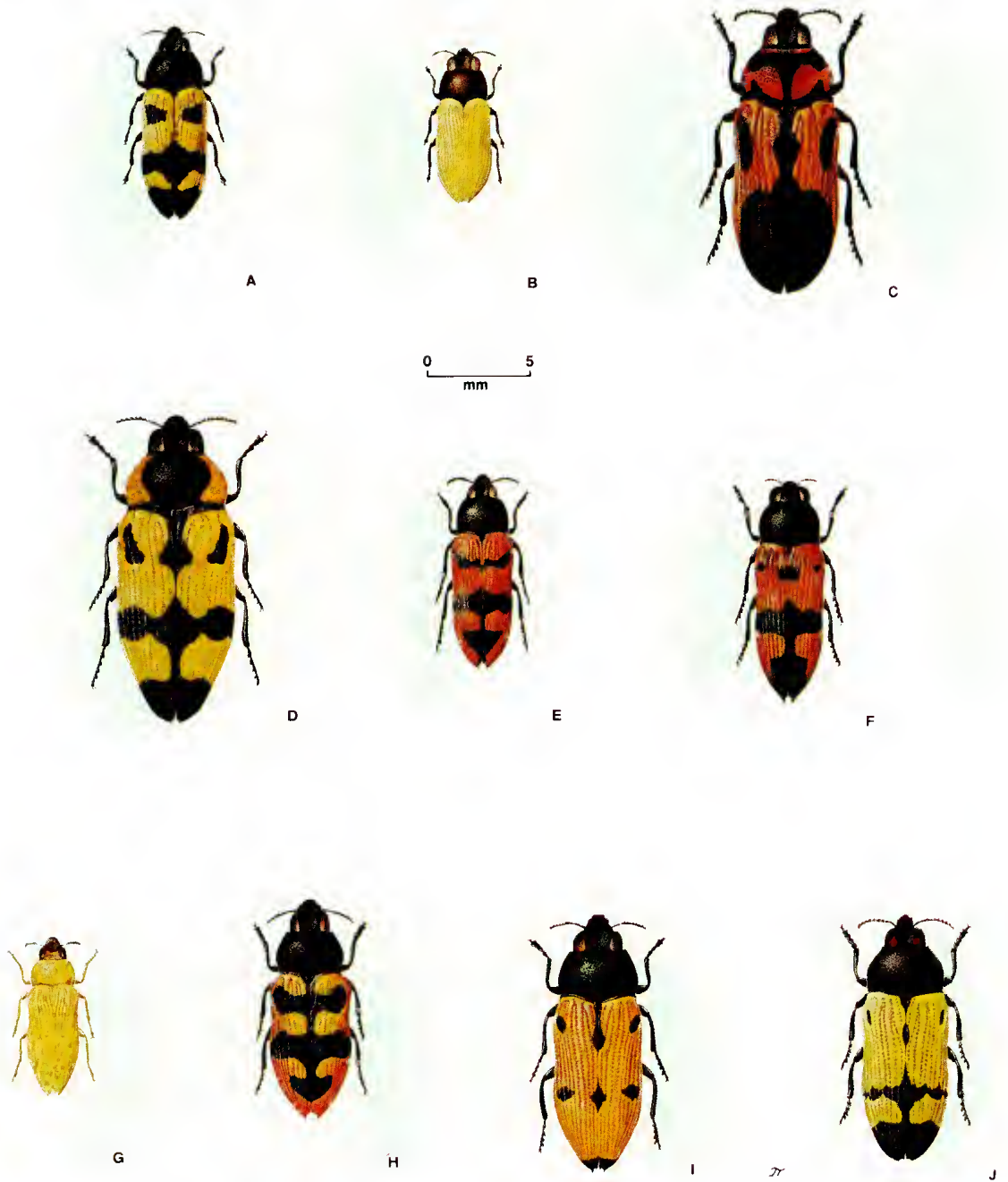


Fig. 5. A. *Stigmodera powelli* sp. nov., B. *S. dingoensis* sp. nov., C. *S. hypocrita* sp. nov., D. *S. goldingi* sp. nov., E. *S. furtiva* sp. nov., F. *S. eneabba* sp. nov., G. *S. substacea* sp. nov., H. *S. marginata* sp. nov., I. *S. yellowdinensis* sp. nov., J. *S. storeyi* sp. nov.

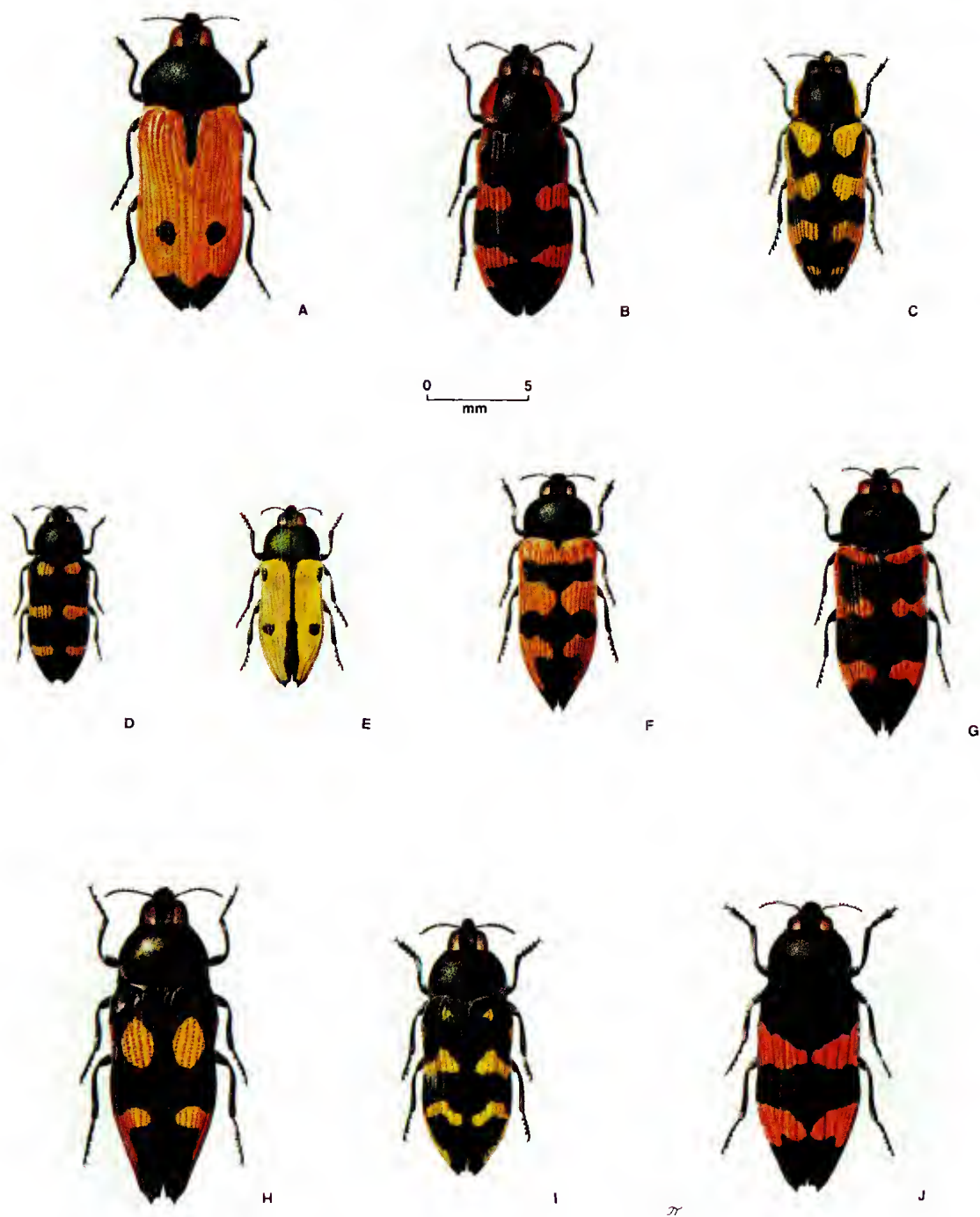


Fig. 6. A. *Stigmodera armstrongi* sp. nov., B. *S. supergrata* sp. nov., C. *S. forresti* sp. nov., D. *S. alpestris* sp. nov., E. *S. goodingi* sp. nov., F. *S. kalbarri* sp. nov. G. *S. boldensis* sp. nov., H. *S. pseudasilida* sp. nov., I. *S. dimidiata* Carter, J. *S. variegata* sp. nov.

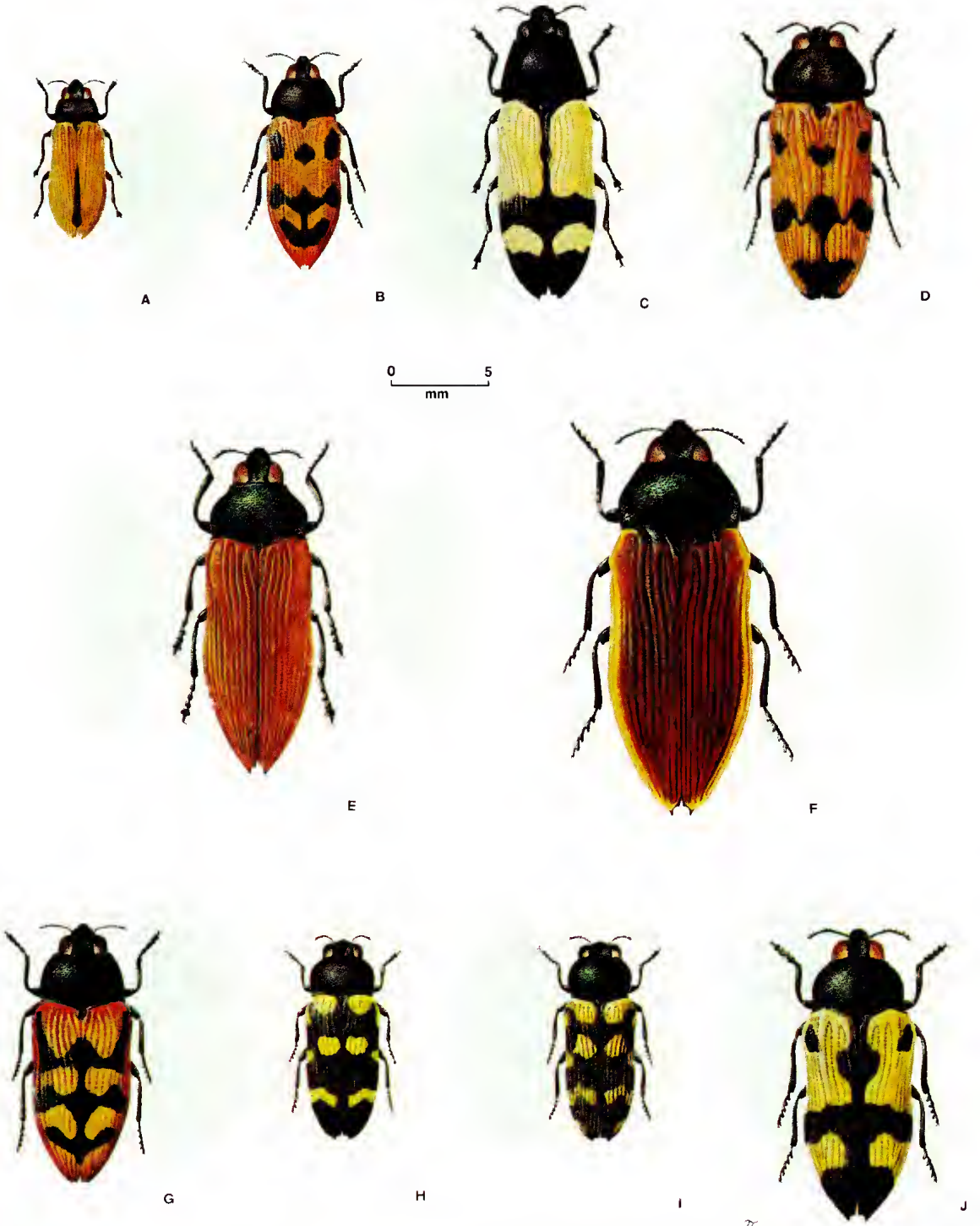


Fig. 7. A. *Stigmodera pseuderythroptera* sp. nov., B. *S. hanloni* sp. nov., C. *S. thurmerae* sp. nov., D. *S. turneri* sp. nov., E. *S. scintillata* sp. nov., F. *S. jeanae* sp. nov., G. *S. triramosa* Thomson, H. *S. chinnocki* sp. nov., I. *S. euclae* sp. nov., J. *S. booanyia* Carter.

*Paratypes*. W.A.: 4 ♂, 20.x.1930, Wembley, SAMA, AMSA; ♂ & 3 ♀, same data as holotype, WAMA; 3 ♂ & ♀, 20.xi.1930, Wembley. *H. W. Brown*, WAMA; ♀, 1.xi.1969, Wembley. *E. A. Jefferys & M. Archer*, WAMA; ♂, 28.x.1978, Wembley. *T. M. S. Hanlon*, WAMA.

*Colour*. Head blue-green apex, blue-black base. Antennae blue-green. Pronotum blue-black, lateral margin blue-green. Scutellum black with blue reflections. Elytra red with following black markings with blue reflections: narrow basal margin; broad pre-medial fascia concave forwards, ends not touching margin; broad post-medial fascia touching margin projecting forwards on suture; mark covering apex, all marks connected down suture. Undersurface and legs blue-green. Hairs silver.

*Shape and sculpture*. Head closely punctured, broad median sulcus, muzzle very short. Antennae: segments 1-3 obconic, 4-11 toothed. Pronotum closely punctured, small basal fovea extending forwards to middle as glabrous line, basal notches represented by glabrous area; projecting forwards in middle of apical margin, basal margin barely bisinuate; laterally parallel-sided at base, rounded after middle and narrowed to apex. Scutellum scutiform, punctured, flat. Elytra punctate-striate, intervals flat in middle, convex at apex, punctured and wrinkled; laterally angled out from sides, rounded at humeral callus, concave then rounded after middle to bispinose apex; marginal spines larger than sutural, inside edge of marginal spine straight, margin rounded at the base to sutural spine, apices diverging. Undersurface shallowly punctured, sparse moderately long hairs.  $S_7$  truncate in male, bilobed in female.

*Size*. Males,  $13.0 \pm 0.19 \times 4.7 \pm 0.09$  mm (10). Females,  $13.0 \pm 0.18 \times 4.9 \pm 0.11$  mm (6).

*Male genitalia*. Fig. 3C. The sides of the parameres are rounded after the middle and narrowed to the apices. The median lobe is pointed at the apex and the sides acutely angled. The apophysis of the basal piece is of medium width and slightly elongated. Overall the length of the genitalia is similar to that of *S. trifasciata* (Fig. 3B) but the two are distinct.

*Remarks*. Belongs in the *S. trifasciata* L. & G. species group because of similarities in male genitalia and external morphology. It is the only known red and blue species in the group. The adults were collected on *Chamaelaucium* flowers. The area of capture has now been

declared as Bold Park Reserve and the specific name has been derived from this name.

***Stigmodera (Castiarina) pseudasilida* sp. nov.**  
FIG. 6H.

*Holotype*. ♀, Acacia Plateau, N.S.W. i.1948, *H. Davidson*, SAMA I 21 147.

*Paratypes*. 2 ♀, same data as holotype, IHQA; ♂, Cunningham Gap, Qld xii.1977, *A. Harslett*, SAMA; ♀, paratype of *S. acuta* Deuquet, RMBB; ♀, Dorrigo, N.S.W., *H. J. Carter* collection, NMVA.

*Colour*. Head, antennae, pronotum, undersurface and legs green. Scutellum green with blue reflections. Elytra basal colour yellow, margin red with following black markings: broad pre-medial fascia covering basal margin and reaching lateral margin; broad fascia at middle reaching margin and joining 1st fascia, enclosing large yellow basal spot on each elytron and small red mark on margin; elongate pre-apical mark covering apex and spines, enclosed between 2nd fascia a yellow spot which merges into a red margin. Hairs silver.

*Shape and sculpture*. Head with sparse shallow punctures, glabrous, median sulcus, muzzle short. Antennae: segments 1-3 obconic, 4-11 toothed. Pronotum with sparse shallow punctures, glabrous, very small basal fovea and very small basal notches 2/3 distance from middle to margin, large fovea on each side in angles of margin; projecting forwards in middle of apical margin, basal margin bisinuate; laterally parallel-sided, rounded before middle and narrowed to apex. Scutellum scutiform, without punctures, glabrous, flat. Elytra punctate-striate, scutellary, 3rd, 5th and 9th intervals from suture convex, slightly raised and glabrous, margin flattened, intermediate intervals flat; laterally angled out from base, rounded at humeral callus, concave, then rounded after middle, tapered to bispinose apex; marginal spine larger than sutural, margin rounded and indented between, apices diverging. Undersurface with sparse shallow punctures, very sparse short hairs. Mesosternal process raised,  $S_7$  truncate in male, rounded in female.

*Size*. Male,  $13.2 \times 4.8$  mm (1). Females,  $14.2 \pm 0.29 \times 5.2 \pm 0.07$  mm (5).

*Male genitalia*. Unknown, as the only male specimen available has been gutted.

*Remarks*. This species resembles an Asilid fly in profile as do many of the species in the "producta" mimicry complex. It occurs on the

edge of high altitude rain forest. It is not possible to place the species within a species group because male genitalia are as yet unavailable. The female paratype of *S. acuta* Deuquet is clearly unassociated with males of that species which is a synonym of *S. delicatula* Kerremans. The specific name is derived from *pseudēs* Gr. false and *asilus* L. gadfly.

***Stigmopera (Castiarina) variegata* sp. nov.**

FIGS 3F, 6J.

*Holotype*, ♂, Corin Dam Rd., Kangaroo Creek, A.C.T. 28.ii.1972, R. J. Kohout, ANIC.

*Allotype*, ♀, Mt Buffalo, Vic. 29.xii.1951, F. E. Wilson, NMVA.

*Paratypes*: A.C.T.: ♂, Blundells, 4.i.1935, W. Raftery, ANIC; ♂, Blundells, 26.xii.1960, M. Margules, ANIC; ♂, same data as holotype, SAMA. Vic.: ♀, Gippsland, NMVA; ♂, Beaconsfield, i.1924, NMVA; ♀, Warburton, C. Oke, NMVA; ♀, Narbathong, 22.i.1949, F. E. Wilson, NMVA; ♂, no data, NMVA; ♀, Acheron Way, 11.i.1971, R. G. Thompson, RTVA; ♀, ZMHU.

*Colour*. Head green with bronze reflections. Antennae green with yellow reflections. Pronotum green with bronze reflections at margins. Scutellum green with bronze reflections. Undersurface green with yellow reflections. Legs blue-green. Elytra red with following black markings with green reflections: basal margin; broad pre-medial fascia; broad post-medial fascia; mark covering pre-apex and apex. Hairs silver.

*Shape and sculpture*. Head closely punctured, deep median sulcus, muzzle short. Antennae: segments 1-3 obconic, 4-11 toothed. Pronotum closely punctured, basal fovea, basal notches on each side closer to margin than to middle, broad fovea at basal margin on each side; apical margin straight, basal margin barely bisinuate; laterally gradually rounded out from base, rounded before middle and narrowed to apex, margin near base dorso-ventrally flattened. Scutellum scutiform, punctured, excavate. Elytra costate; scutellary, 3rd, 5th, 7th and 9th intervals convex and raised and smooth, those between flat and wrinkled, lateral margins flattened; laterally angled out from base, rounded at humeral callus, then concave and rounded after middle to bispinose apex; marginal spine larger than sutural, margin rounded and indented between, apices diverging. Undersurface with small shallow punctures, moderately dense short hair,  $S_7$  truncate in both sexes.

*Size*. Males,  $13.2 \pm 0.35 \times 4.9 \pm 0.13$  mm (6). Females,  $12.7 \pm 0.4 \times 5.0 \pm 0.17$  mm (6).

*Male genitalia*. Fig. 3F. Sides of parameres angled outwards rounded just before apex. Median lobe pointed in middle and angled outwards at sides. The apophysis of basal piece medium width. Very similar to the genitalia of *S. coeruleipes* Saunders (Fig. 3G) which is thicker with the apophysis of the basal piece wider.

*Remarks*. Belongs in *S. coeruleipes* Saunders species group because of similarities in male genitalia and external morphology. The specific name is derived from *variegatus* L. of different sorts (colours).

***Stigmopera (Castiarina) pseuderythroptera* sp. nov.**

FIGS 3H, 7A.

*Holotype*, ♂, Wyberba, Qld E. Sutton, QMBA.

*Colour*. Head black with bronze reflections. Antennae black with blue reflections. Pronotum and scutellum black with bronze reflections. Elytra red-brown with narrow black basal margin and narrow black elongate sutural mark from before middle to pre-apex. Undersurface and legs dark blue. Hairs silver.

*Shape and sculpture*. Head closely punctured, broad median sulcus, muzzle short. Antennae: segments 1-3 obconic, 4  $\frac{1}{2}$ -toothed, 5-11 toothed. Pronotum closely punctured, very deep broad fovea extending to apical margin as impressed line; apical margin straight, basal margin bisinuate; laterally rounded from base to apex widest before middle; margin dorso-ventrally compressed near base. Scutellum cordiform without punctures, excavate in middle. Elytra costate, 3rd and 5th intervals from suture prominently so, scutellary, 7th and 9th less so, apical margin turned upwards, other intervals flat, heavily punctured; laterally angled out from base to humeral callus there noticeably wider than pronotum, rounded then concave, rounded widest part after middle, rounded to bispinose apex; marginal spine larger than sutural, margin rounded and slightly indented between, apices diverging slightly. Undersurface close shallow punctures, moderately haired, hairs short,  $S_7$  truncate in male. Male tarsal pads: on legs 2 and 3, absent on tarsomeres 1, 2 and 3, replaced respectively by median triple, double, triple spines.

*Size*. Male,  $7.9 \times 3.0$  mm (1).



*Male genitalia*. Fig. 3H. Sides of the parameres rounded after the middle and narrowed to the apex. Median lobe sharp and sides acutely angled. Apophysis of basal piece medium width.

*Remarks*. Not a member of *S. sexplagiata* Gory group as male genitalia not triangular-shaped and differs from the other lycid mimicking species. I am unable to associate this species with any other. The specific name is derived from *pseudes* Gr. false and *erythroptera*.

***Stigmodera (Castiarina) hanloni* sp. nov.**

FIGS 3I, 7B.

*Holotype*. ♂, Toolina Rockhole, Balladonia district, W.A. 3.x.1979, T. M. S. Hanlon & G. Harold, WAMA.

*Allotype*. ♀, same data as holotype, WAMA.

*Paratypes*, 12 ♂ & 2 ♀, same data as holotype, SAMA & WAMA & MPWA.

*Colour*. Head, antennae, scutellum, pronotum and undersurface either green-bronze or blue-bronze. Legs: femora and tibia either bronze, dull blue or green-blue; tarsi green. Elytra testaceous in centre surrounded by intense salmon-pink with following dark blue markings: basal margin; elongate angled spot on each humeral callus; pre-medial diamond-shaped mark on suture; post-medial fascia consisting of diamond-shaped mark on suture connected to a more or less diamond-shaped mark on each elytron, not reaching margin; irregular pre-apical mark, last two connected down suture to apex. Apex and spines covered in heavily marked specimens, the spines only in lightly marked specimens. Hairs silver.

*Shape and sculpture*. Head closely punctured, broad median sulcus, muzzle short. Antennae: segments 1-3 obconic, 4-11 toothed. Pronotum closely punctured, basal fovea extending to middle as glabrous line; apical margin projecting forwards in middle, basal margin barely bisinuate; laterally parallel-sided at base, then rounded to widest point before middle, rounded and narrowed to apex. Scutellum scutiform, few punctures, excavate. Elytra punctate-striate, intervals flat at base, convex elsewhere, punctured on lateral margin smooth in centre; laterally angled from base, rounded at humeral callus, concave until after middle then rounded and tapered to bispinose apex; marginal spine small and blunt, sutural spine minute, margin indented and rounded between, apices slightly diverging. Under-

surface closely punctured and hairy, hairs moderately long.  $S_7$  truncate in males, narrowed and rounded in females.

*Size*. Males,  $10.7 \pm 0.2 \times 4.0 \pm 0.1$  mm (13). Females,  $12.8 \pm 0.11 \times 4.8 \pm 0.05$  mm (3).

*Male genitalia*. Fig. 3I. The sides of the parameres are straight after the middle and slightly angled outwards until they round off to the apex. The median lobe is sharp and the sides angled outwards. The apophysis of the basal piece is of medium width. The genitalia closely resemble those of *S. octomaculata* Saunders (Fig. 3J) which are slightly wider.

*Remarks*. Placed in *S. octomaculata* Saunders species group on the basis of similarities in male genitalia and external morphology. All specimens were collected at one locality on the flowers of *Eucalyptus diversifolia*. Named after Mr T. M. S. Hanlon.

***Stigmodera (Castiarina) subvicina* sp. nov.**

FIGS 3K, 4B.

*Holotype*. ♂, Morwell, Vic. 22.xi.1958, M. Coulson, ANIC.

*Allotype*. ♀, Morwell, Vic. 20.i.1958, Carne, Helman, Greaves, ANIC.

*Paratypes*, Vic.: ♀, Traralgon, 7.i.1959, G. T. Coulson, SAMA; ♂, Traralgon, 7.i.1959, G. T. Coulson, ANIC; ♂ & ♀, Traralgon, 9.i.1959, G. T. Coulson, ANIC; ♂, Traralgon, 10.ii.1959, G. T. Coulson, ANIC; ♂, Morwell, 30.xi.1953, M. & G. Coulson, ANIC; ♂, Morwell, 30.xi.1958, M. & G. Coulson, SAMA; ♀, Morwell, 9.xii.1958, M. & G. Coulson, ANIC; ♂, Morwell, 20.xii.1958, M. & G. Coulson, ANIC; ♂, Morwell, 23.xii.1964, G. T. Coulson, ANIC. N.S.W.: ♂, Armidale, 14.xii.1958, P. S. Paul, ANIC; ♂, Grafton, 5.xii.1954, F. S. Paul, ANIC; ♀, 32 km N-E Rylstone, 1.xii.1951, T. G. Campbell, ANIC; ♂, Nowra Rd, Corang R. Crossing, 9.xii.1972, J. Baulderson, ANIC; ♂, Durras, 29.xi.1964, I. Cameron, ANIC; ♂, Queenbeyan, 18.i.1963, S. Barker, SAMA; ♂ & ♀, Nat. Park, xi.1952, R.D., ANIC; 2 ♂ & ♀, Wairoonga, H. J. Carter, ANIC; ♀, Mantly, E. W. Ferguson Coll., ANIC; ♀, Mitrang, E. W. Ferguson Coll., ANIC. A.C.T.: ♀, Cotter R., 10.xii.1953, Fuller, ANIC; ♂ & ♀, Black Mt 14.ii.1954, E. F. Reik, ANIC; ♂, Black Mt 23.i.1962, D. P. Carne, ANIC; ♂, Tidbinbilla Nat. Res. 27-28.ii.1972, R. J. Kohout, ANIC; ♂, no data, ANIC.

*Colour*. Head, pronotum, and scutellum black with blue and/or bronze reflections. Antennae: segments 1-2 blue, 3-11 bronze. Undersurface dark purple. Legs: femora and tibia dark purple; tarsi blue. Elytra yellow with following dark blue markings; broad basal fascia reaching margin, enclosing a yellow spot on each elytron at base of lateral margin, absent in some specimens, enlarged in others; broad

fascia at middle reaching margin; broad pre-apical mark also covering apex, all marks connected down suture. Hairs silver.

*Shape and sculpture.* Head shallowly punctured, median sulcus, short muzzle. Antennae: segments 1-3 obconic, 4-11 toothed. Pronotum shallowly punctured, basal fovea extending forwards to middle as glabrous line, basal notches closer to margin than to middle; apical margin straight, basal margin bisinuate; laterally parallel-sided at base rounded outwards before middle, narrowed to apex. Scutellum scutiform, punctured, flat. Elytra punctate-striate, intervals convex slightly punctured, lateral margin flat and extended outwards; laterally angled out from base, rounded at humeral callus, concave, rounded after middle and narrowed to bispinose apex; small marginal spine, smaller sutural spine, margin rounded and indented between, apices diverging. Undersurface close shallow punctures, moderately hairy, hairs short.  $S_7$  truncate in males, rounded in females. Mesosternal process inflated.

*Size.* Males,  $12.8 \pm 0.2 \times 5.0 \pm 0.1$  mm (20). Females,  $13.3 \pm 0.3 \times 5.4 \pm 0.1$  mm (11).

*Male genitalia.* Fig. 3K. The sides of the parameres bulge outwards in the middle and again just before they round off to the apex. The median lobe has a long sharp point and the apophysis of the basal piece is of medium width. The shape of the male genitalia of this species place it in the *S. vicina* Saunders species group. The genitalia are close to *S. distincta* Saunders (Fig. 3L) but the median lobe in that species has a slightly thicker spine and the apophysis of the basal piece is thinner.

*Remarks.* This species has been confused with *S. vicina* Saunders. The apices differ as in *S. vicina* the spines are widely separated and there is a straight interval between. In *S. subvicina* the margin is indented between the spines. The specific name is derived from *sub* L. under, *vicina*.

***Stigmodera (Castiarina) scintillata* sp. nov.**

FIGS 3M, 7E.

*Holotype.* ♂, Stanthorpe, Qld, xii.1968, *J. Hartslett*, SAMA I 21 148.

*Allotype.* ♀, Pyramids, Qld, 13.xii.1944, *E. Sutton*, SAMA I 21 149.

*Paratypes.* ♂, Stanthorpe, Qld, xii.1954, *J. Gemmill*, ANIC; 6 ♂ & 4 ♀, Pyramids, Wyberba, Qld, 12/13.xii.1944, 17/18.xii.1948, 25.xii.1956, *E. Sutton*, QMBA, SAMA, EAQA; ♀, no data, ANIC.

*Colour.* Head, antennae, pronotum, scutellum, undersurface and legs bright green with yellow reflections. Elytra yellow with narrow dark green basal margin and narrow dark green strip along suture except near scutellum, spines black. Hairs silver.

*Shape and sculpture.* Head closely punctured, median sulcus, muzzle short. Antennae: segments 1-3 obconic, 4-11 toothed. Pronotum closely punctured, glabrous; basal fovea and basal notches on each side, closer to margin than to middle; projecting forwards strongly in middle of apical margin, basal margin barely bisinuate; laterally parallel-sided at base, rounded out before middle, rounded and narrowed to apex, dorso-ventrally flattened at base. Scutellum cordiform, punctured, glabrous, excavate. Elytra punctate-striate, intervals convex, more so at apex than base, small punctures, slightly wrinkled; laterally parallel-sided at base, then slightly angled outwards, rounded at humeral callus, concave until after middle, rounded and narrowed to bispinose apex; marginal spine larger than sutural, margin rounded and indented between, apices barely diverging. Undersurface with close shallow punctures. Hairs short and sparse.  $S_7$  rounded in both sexes.

*Size.* Males,  $17.0 \pm 0.26 \times 6.1 \pm 0.12$  mm (8). Females,  $19.5 \pm 0.4 \times 7.1 \pm 0.01$  mm (5).

*Male genitalia.* Fig. 3M. The sides of the parameres are angled outwards for most of their length but are parallel just before they round off to the apex. The median lobe is pointed and the sides are angled outwards. The apophysis of the basal piece is wide. Male genitalia of *S. variopecta* Thomson (Fig. 3N) are very similar except that the apophysis of the basal piece is not as wide.

*Remarks.* Close to *S. variopecta* Thomson but differs in colour and male genitalia. The specific name is derived from *scintillatus* L. glitter.

***Stigmodera (Castiarina) jeanae* sp. nov.**

FIGS 3P, 7F.

*Holotype.* ♂, Wyberba, Qld 14.xii.1958, *E. Sutton*, QMBA.

*Allotype.* ♀, Stanthorpe, Qld, P.H., ANIC

*Paratypes.* ♂, Stanthorpe, Qld 11.xii.1926, QMBA; ♀, Wyberba, Qld 29.xii.1939, *E. Sutton*, QMBA; ♂, Wyberba, Qld 29.xii.1950, *E. Sutton*, W. Goebel, SAMA; ♀, Stanthorpe, Qld vi.1958, *A. Gemmill*, ANIC; ♀, Stanthorpe, Qld, *E. Sutton*,

ANIC: ♀, Emerald, Vic. xi.1905, *Jarvis*, SAMA; ♂, Coon Dam Rd, Kangaroo Crk, A.C.T. 28.ii.1972, R. J. Kohout, ANIC.

*Colour.* Head, antennae, pronotum, scutellum, undersurface and legs bright metallic green. Elytra reddish-brown with narrow dark green basal margin, backed with black from scutellum to level with marginal notches on scutellum, lateral margin yellow on two outer intervals. In some specimens, intervals in middle yellow at basal ends merging into red-brown at apical ends. Apical spines dark green. Hairs silver.

*Shape and sculpture.* Head punctured, deep median sulcus; muzzle short. Antennae: segments 1-3 obconic, 4-11 toothed. Pronotum shallowly punctured, median glabrous line from base to apex in some specimens, to middle only in others, with glabrous area on each side in middle towards apex and another on each side near basal angle in some specimens, basal notch on each side closer to margin than to middle; apical margin projecting in middle, basal margin bisinuate; laterally angled outwards from base, angled before middle, narrowed to apex, lateral margins dorso-ventrally flattened near base forming a ledge enclosing two ill defined fovea in the angles. Scutellum scutiform, punctured, flat. Elytra punctate-striate, intervals convex and smooth, lightly punctured; laterally angled out from base, rounded at humeral callus, concave until after middle, rounded to bispinose apex; marginal spine long and conical, sutural spine short; margin rounded and indented between, apices diverging. Undersurface with shallow punctures, moderately long sparse hair,  $S_7$  truncate in male, rounded and slightly pointed in female. Tarsal claws in males broader and more angled than in females.

*Size.* Males,  $20.7 \pm 0.59 \times 8.0 \pm 0.45$  mm (5). Females,  $21.8 \pm 0.56 \times 8.2 \pm 0.27$  mm (6).

*Male genitalia.* Fig. 3P. The sides of the parameres bulge outwards after the middle and become parallel-sided towards the apices where they round off abruptly. The median lobe is bluntly pointed in the middle, the sides are angled away and then form a ledge before they drop off vertically. In *S. semicincta* L. & G. (Fig. 30) the sides of the parameres are angled outwards and are not as abruptly rounded to the apices. The median lobe is bluntly pointed but the sides are angled away

until they drop off vertically. The apophysis of the basal piece in both species is wide.

*Remarks.* Belongs to *S. semicincta* L. & G. species group because of similarities in male genitalia and external morphology. Stanthorpe specimens are bright green, the single specimen from A.C.T. dull green with blue-green undersurface. *S. semicincta* has black elytra with yellow lateral margins and the rest of the body is dark blue, whereas *S. jeanae* has pale brown elytra with yellow margins and a green body. Named after Mrs. J. Harslett, Amiens, Qld.

*Stigmodera (Castiarina) triramosa* Thomson 1879

FIGS 3Q, 7G.

*Stigmodera triramosa* Thomson 1879: p. 32. Kerremans, 1892: p. 158. 1902: p. 214.

*Holotype.* ♂, Adelaide, S. Aust. MNHN.

*Colour.* Head, antennae, pronotum, undersurface and legs olive green with bronze reflections. Scutellum blue-green with bronze reflections. Elytra yellow with red margins and with following black markings with blue or blue-green reflections: narrow basal margin; narrow pre-medial fascia not reaching margin connected at the end to a vitta running obliquely to the humeral callus, projecting forwards at suture; narrow post-medial anchor shaped mark, all marks connected down suture. Hairs silver.

*Shape and sculpture.* Head closely punctured, narrow median sulcus, eyes bulbous, muzzle short. Antennae compressed; segments 1-4 obconic, 5-11 toothed. Pronotum closely punctured, small basal fovea extending to apical margin as glabrous line; apical margin projecting in middle, basal margin almost straight; laterally parallel-sided at base, rounded before middle then tapered to apex. Scutellum without punctures, glabrous, excavate. Elytra punctate-striate, intervals convex more so at apex and sides than in middle, deeply punctured; laterally parallel-sided at base angled out then rounded at humeral callus, concave then rounded after middle, rounded to bispinose apex; spines small and equal, margin rounded between. Undersurface with shallow punctures, densely haired, hairs long.  $S_7$  truncate in both sexes. *Size.* Males,  $12.7 \pm 0.17 \times 5.0 \pm 0.08$  mm (20). Females,  $12.9 \pm 0.47 \times 5.1 \pm 0.23$  mm (11).

*Distribution.* S. Aust.: Lucindale, Kangaroo Isd, Eyre Peninsula, Vic.: Little Desert, Casterton.

*Male genitalia.* Fig. 3Q. The parameres are parallel-sided after the middle and are rounded off abruptly to the apices. The median lobe is pointed and narrow and the apophysis of the basal piece is narrow. In *S. simulata* L. & G. (Fig. 3R) the sides of the parameres are angled outwards after the middle then gently rounded off to a narrow apex. The median lobe is also pointed and narrow but the apophysis of the basal piece is wide.

*Remarks.* Member of *S. simulata* L. & G. species group. *S. triramosa* has yellow elytra with green markings and red margin and the rest of the body is green. *S. simulata* has yellow elytra with black markings and the rest of the body is bronze.

**Stigmodera (Castiarina) chincocki** sp. nov.

FIGS 3S, 7H.

*Holotype.* ♂, 9.1 km S Lake Varley T.O., Hyden-Southern Cross Rd. W.A. 6.xii.1980, R. J. Chincock, WAMA.

*Allotype.* ♀, same data as holotype, WAMA.

*Paratypes.* W.A.: ♂, same data as holotype, SAMA; ♀, 1.6 km W N-W Balladonia Motel, 3.xi.1969, K. Key & M. Upton, ANIC; 2 ♂ & 5 ♀, 18-32 km W Balladonia, 17.x.1982, S. Barker, P. G. Kempster & H. Vanderwoude, WAMA & SAMA; ♀, 18 km S-W Deralinya Ruin, Balladonia district, 22.x.1982, S. Barker, P. G. Kempster & H. Vanderwoude, SAMA.

*Colour.* Head, antennae, undersurface and legs bronze. Pronotum bronze with purple reflections. Scutellum dark blue with purple reflections. Elytra yellow with following black markings: narrow basal margin; pre-medial fascia expanded at both ends, anteriorly touching basal margin, posteriorly touching lateral margin, enclosing a yellow spot in middle at base and at humeral callus on margin; post-medial fascia reaching margin, projecting obliquely forwards from middle and touching margin enclosing yellow spot in middle between 1st and 2nd fascia and spot on margin between oblique projection and 2nd fascia; mark covering whole apex, all marks connected down suture. Hairs silver.

*Shape and sculpture.* Head closely punctured, small median sulcus, muzzle very short. Antennae compressed; segments 1-4 obconic, 5-11 toothed. Pronotum closely punctured; basal fovea extending to middle as glabrous line, basal notches obscure; apical margin straight,

basal margin bisinuate; laterally rounded from base to apex widest before middle. Scutellum cordiform, without punctures, excavate at anterior margin. Elytra punctate-striate, intervals convex, more so at sides and apex, heavily punctured at sides, less in middle; laterally angled out from base, rounded at humeral callus, concave, rounded after middle and narrowed to bispinose apex; spines small, margin rounded and indented between, apices diverging, apical margin sub-serrate including interval between spines. Undersurface with shallow punctures, moderately hairy, hairs moderately long.  $S_7$  rounded in both sexes.

*Size.* Males,  $9.2 \pm 0.35 \times 3.5 \pm 0.14$  mm (4). Females,  $10.8 \pm 0.09 \times 4.0 \pm 0.06$  mm (8).

*Male genitalia.* Fig. 3S. The sides of the parameres are rounded outwards well before the middle and rounded off and narrowed to the apices. The median lobe is pointed and the sides angled acutely outwards. The apophysis of the basal piece is elongate and medium width. The aedeagus of *S. cupricauda* Saunders (Fig. 3T) is slightly larger. The sides of the parameres are rounded outwards gradually and are more abruptly rounded to the apex. The median lobe is blunter at the apex and the apophysis of the basal piece is slightly more elongate and of medium width.

*Remarks.* Closest species on basis of external morphology and male genitalia is *S. cupricauda* Saunders which occurs in N.S.W. and is a more elongate species. Three 1980 specimens were collected on *Eremophila inflata* an endangered plant. Balladonia specimens were collected on the flowers of *Eremophila paisleyi*, *E. ionantha* & *E. scoparia*. Named after Mr R. J. Chincock, South Australian Herbarium.

**Stigmodera (Castiarina) turneri** sp. nov.

FIGS 3U, 7D.

*Holotype.* ♂, 10 km W Euabalong West, N.S.W. 18.xi.1981, J. R. Turner, SAMA 1 21 150.

*Allotype.* ♀, 10 km W Euabalong West, N.S.W. 19.xi.1981, J. R. Turner, SAMA 1 21 151.

*Paratypes.* 2 ♂, 10 km W Euabalong West, N.S.W. 28.xi.1981, J. R. Turner, JINA; 9 ♂ & 5 ♀, 22-27 km E Kimba, S. Aust. 25.x.1982, S. Barker, P. G. Kempster & H. Vanderwoude, SAMA.

*Colour.* Head bronze with coppery reflections at base. Antennae, undersurface and legs bronze. Pronotum bronze with or without

coppery reflections. Elytra pale yellow with following markings: narrow dark brown basal margin; black pre-medial fascia not reaching margins and expanded anteriorly and posteriorly at ends, represented in most specimens by a spot towards the margin on each elytron and one on suture; black post-medial fascia reaching margin, consisting of an elongate angled spot on each elytron and one on suture, all connected by a thin band on each side; black spade-shaped mark covering apex. Hairs silver.

*Shape and sculpture.* Head with close punctures, broad median sulcus, prominent ridge inside each antennal cavity, very short muzzle, eyes bulbous. Antennae compressed: segments 1-3 obconic, 4-11 toothed. Pronotum with large punctures, basal fovea extending forwards as impressed line to near apical margin, basal notches represented by glabrous area on each side closer to margin than middle; projecting forwards slightly in middle of apical margin, basal margin barely bisinuate; laterally parallel-sided at base, rounded to widest part before middle, rounded to apex. Scutellum scutiform, without punctures, excavate. Elytra punctate-striate, convex with heavy punctures; laterally parallel-sided at base, angled outwards, rounded at humeral callus, concave, rounded after middle and narrowed to truncate apex; no marginal spine, minute sutural spine, apices slightly diverging, apex sub-serrate. Undersurface with shallow punctures, edges of abdominal sclerites without punctures, glabrous. Sparse short hairs.  $S_7$  truncate in males, rounded and slightly pointed in females. *Size.* Males,  $13.9 \pm 0.19 \times 5.3 \pm 0.06$  mm (12). Females,  $15.1 \pm 0.4 \times 5.8 \pm 0.18$  mm (6).

*Male genitalia.* Fig. 3U. The parameres are parallel-sided after the middle and round off abruptly to the apices. The median lobe is broad and bluntly pointed and the sides angled outwards. The apophysis of the basal piece is wide. In *S. convexa* Carter (Fig. 3W) the parameres are parallel-sided towards the apices and round off abruptly to the apices. The median lobe is bluntly pointed and the sides angled outwards. The apophysis of the basal piece is medium width.

*Remarks.* This species is closest to *S. convexa* Carter. It is larger and has yellow elytra while those of *S. convexa* are red. It has been found associated with *Myoporum aruminatum* and *Eremophila longifolia* in N.S.W. and with

*Eremophila scoparia* in South Australia. Named after Mr J. R. Turner, Hill End, N.S.W.

***Stigmodera* (Castiarina) *euciae* sp. nov.**

FIGS 3V, 7I.

*Holotype.* ♂, 36 km E S.A./W.A. border, 27.xii.1980, M. Golding & M. Powell. SAMA I 21 152.

*Allotype.* ♀, 35 km E S.A./W.A. border, *Eremophila weldii*, 21.xii.1982, J. M., S., & S. J. Barker. SAMA I 21 153.

*Paratypes.* 4 ♂, same data as holotype, MPWA; 3 ♂ & 6 ♀, same data as allotype, SAMA.

*Colour.* Head, antennae, pronotum, undersurface and legs bronze. Scutellum bronze with purple reflections. Elytra yellow with following bronze markings: narrow basal margin; pre-medial fascia expanded at each end anteriorly over humeral callus and posteriorly touching margin and enclosing yellow spot; post-medial fascia touching margin expanded forwards obliquely in middle of anterior edge, touching 1st fascia and enclosing large yellow spot in middle and smaller one on margin; pre-apical spade-shaped mark which expands laterally enclosing a spot on apical margin, all marks connected down suture. Markings much heavier in some specimens and in these there are 7 yellow spots, 4 on the margin and 3 in the middle. Hairs silver.

*Shape and sculpture.* Head with close deep punctures, median sulcus, muzzle very short, eyes bulbous. Antennae compressed: segments 1-4 obconic, 5-11 toothed. Pronotum with close deep punctures, hairy at lateral edges; elongate basal fovea extending to middle as glabrous line, basal notches obscure; projecting forwards in middle of apical margin, basal margin almost straight; laterally rounded from base to apex, widest in middle. Scutellum cordiform, excavate, glabrous. Elytra punctate-striate, striae deep near apex, intervals convex with deep punctures; laterally angled outwards from base rounded at humeral callus, concave, rounded after middle and narrowed to bipinose apex; marginal spine larger than sutural, margin indented between, apices diverging slightly. Undersurface: with shallow punctures, edges of abdominal sclerites glabrous; hairy, hairs moderately long.  $S_7$  truncate in both sexes.

*Size.* Males,  $10.6 \pm 0.18 \times 3.8 \pm 0.09$  mm (8). Females,  $11.6 \pm 0.16 \times 4.3 \pm 0.08$  mm (7).

*Male genitalia.* Fig. 3V. The parameres are parallel-sided after the middle and round off abruptly to the apices. The median lobe is sharp and the sides are curved away at an angle. The apophysis of the basal piece is very narrow. *S. cupricauda* (Fig. 3T) has a blunt median lobe and the apophysis of the basal piece is wider.

*Remarks.* Grouped with *S. cupricauda* Saunders on the basis of male genitalia and external morphology. Distinguished by being a broader species and differences in male genitalia. All specimens examined were collected on the flowers of *Eremophila weldii*. The specific name is derived from the name of the district where it was collected.

*Stigmodera (Castiarina) booyania* Carter 1933

FIG. 7J.

*Stigmodera booyania* Carter, 1933: p. 162. Barker & Edward, 1963: p. 170. Barker, 1979: p. 15.

*Stigmodera booyania* Carter, 1933: p. 162. Obenberger, 1934: p. 687.

This species was described from a unique female specimen collected by Mrs Crocker nee Baesjou on 20.xi.1931 on *Myoporum platycarpum* R. Br. at Booyania Sta, Norseman district, W.A. The type is located in the NMVA. With P. G. Kempster on 20.xi.1980 I collected a series on flowers of *M. platycarpum* on Balladonia Sta W.A., now lodged in the SAMA & WAMA collections. The beetles were common and occurred with *S. subacuticeps* Barker and *S. erythroptera* (Boisduval), this is the first record of the latter species from W.A.

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# **CORRELATION OF THE UPPERMOST LATE PRECAMBRIAN SUCCESSION ACROSS THE TORRENS HINGE ZONE IN THE PORT AUGUSTA REGION OF SOUTH AUSTRALIA**

*BY P. S. PLUMMER*

## **Summary**

Palaeoenvironmental data are used with lithologic criteria to correlate the uppermost Late Precambrian Tent Hill Formation on the Stuart Shelf with the succession in the adjacent Adelaide Geosyncline. It is found that the Tent Hill Formation (*sensu stricto*) lies above a previously unrecognized disconformity and is equivalent to the upper portion of the Wilpena Group within the geosyncline, and not the lower portion as previously believed.